STEEL

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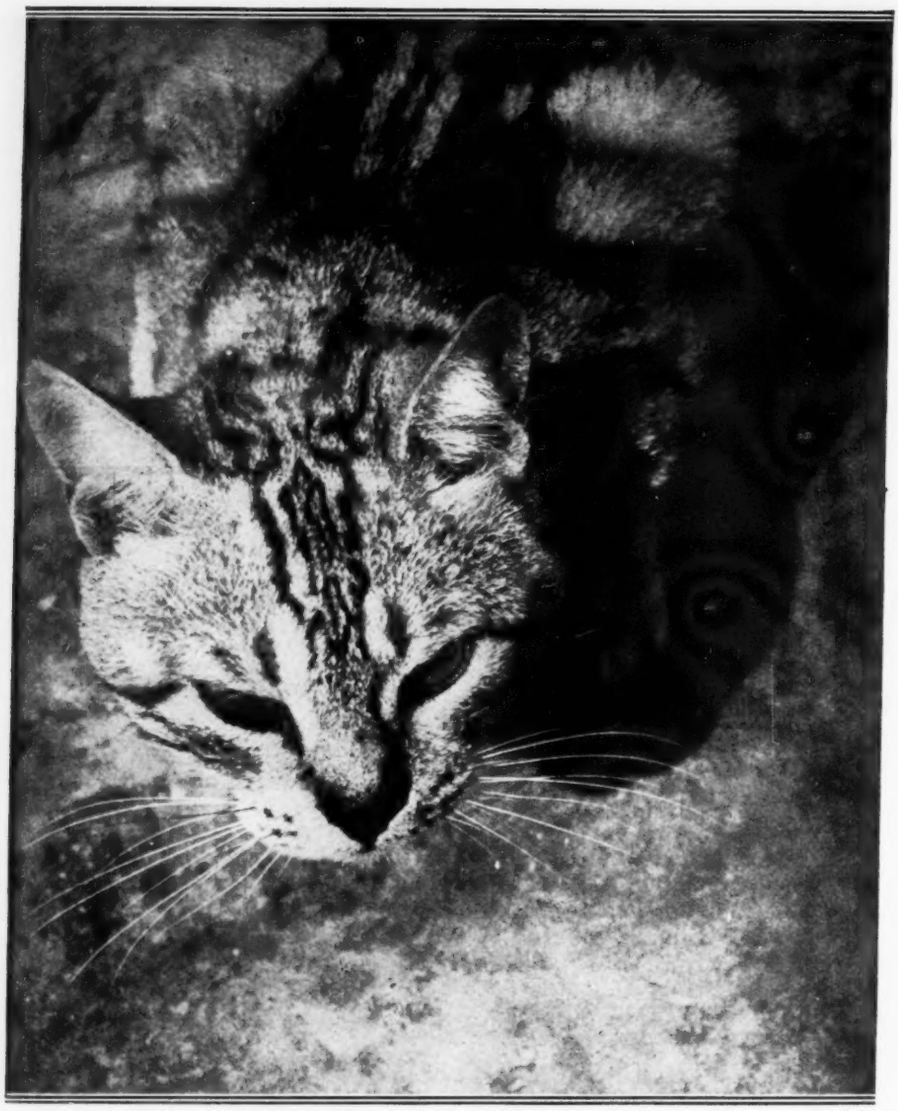

As a Cat Watches —

WITH business on a low volume basis, manufacturers are watching their inventories as a cat watches a mouse.

Six months' stocks of 1929 might be six years' stock of 1932. So the shrewd buyer orders just what is needed for the current work or job and keeps capital liquid for the operation of the business or any emergencies which may arise.

The firms that are forging ahead today are those that are lean and stripped for action—not those that are loaded down with frozen assets.

* * *

That this policy is safe as well as economical is proven by thousands of industrial executives who have practically eliminated their expensive storage and handling facilities in favor of co-operative stocks subject to immediate demand.

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Structurals	Sheets, Full Finished	Strip Steel	Welding Rod	Tool Steel	Firmtread Plates
Rail	Refined Iron	Rivets and Bolts	Forging Bars	Alloy Steel	Small Tools
Plates	Screw Stock			Allegheny Metal	Machinery, etc.

Volume 90 Number 7

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

The Week In Steel

ONLY builders can bid on public work, is the Monroe Doctrine which the federal government and some eastern states propose to set up. Irresponsible brokers who underbid legitimate contractors, then pit one contractor against another to develop ruinous prices, sometimes leading to an abandoned job, are under fire (page 14). A bill in congress would compel bidders on public work to name their allied subcontractors; New Jersey is investigating the financial responsibility of contractors and will issue a "white list"; New York and Massachusetts have enlisted to clean up the industry which for two years has led in the consumption of finished rolled steel.

Joint Research May Vanquish Overcapacity

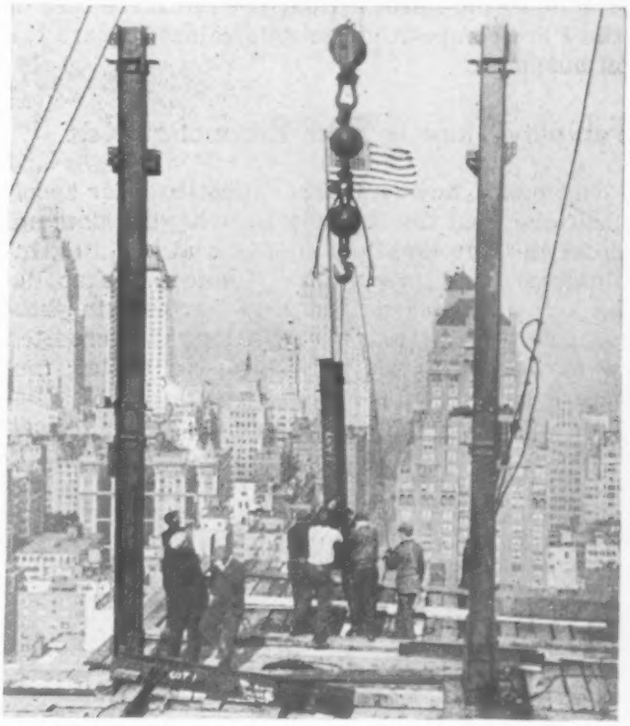
In constructive effort to uncover new markets for steel, the building industry is in the van. Co-operative research, assiduously furthered by organized structural fabricators (page 13), is advocated by them for adoption by the entire steel industry. . . . Technically, the building industry also is alert. Traveling derricks, heretofore restricted to bridge, pier and low-building construction, are erecting the steel for a 16-story warehouse in New York. These derricks (page 30), traveling on three sets of wheels on rails, eliminate jumps as erection advances and promise to set a new erecting record.

Rise in Prices Equals Cut in Wages

While wage reductions may prove of material benefit to the railroads and other industries, the wage factor essentially is a minor one in the building trades, declares a university economist (page 11). Not further cuts but a rise in commodity prices which would lower real wages in his recommendation. . . . Perhaps abandonment of shackling restrictions on productivity is a need of the building trades. At sheet mills, productivity has shown a marked increase (page 16), due in large measure to mechanization and new bonus and piecework systems. . . . An offset to capital, however, is the increased cost of workmen's compensation (page 12), advanced 19 per cent in 1931 and with still higher rates in prospect.

Ford Eight—Promise or Gesture?

With characteristic easiness Henry Ford opens up the most blue sky in months for the automobile industry. Reports of a Ford V-eight and a revised four, with the engines interchangeable in the same chassis (page 17), are confirmed by him. No parts or material orders accompanied the announcement, and



Wide World Photo

"Flag's Up" on 31-story R K O building, first unit of Rockefeller-Radio City group in New York, requiring 125,000 tons of structurals

Photo Courtesy Westinghouse Electric & Mfg. Co.

Work on motors like these for the Pennsylvania railroad's eastern electrification project will proceed if the Reconstruction Finance Corp. grants a loan. A locomotive with 3 such motors can haul a train of 14 Pullmans 90 miles an hour

some weeks may elapse before the Ford plants attain volume production, yet the mere fact of the Ford competition being disclosed clears the atmosphere.

February Thaw in Steel Production Rate

Blue sky, however, is no substitute for specifications, and due largely to dragging demand from the automobile, railroad and building industries steel production (page 46) has declined to 27 per cent, with 26 per cent in prospect for this week. . . . No longer accredited a major indicator, nevertheless unfilled tonnage of the Steel corporation (page 21) by developing a new low has an unsettling effect. . . . This creates more resistance for the financial pulmotor which President Hoover is applying (page 12), assisted this week by a further loosening of rediscount restrictions of federal reserve banks.

French Stabilize Through Comptoirs

While American producers of steel must temper their zeal for stabilization with a due regard for the anti-trust laws, the French openly place their faith in comptoirs. Recently, the comptoir regulating the market on semifinished steel was reorganized (page 58), that for tin plate was effected, the agreement on plates is being broadened to include sheets. . . . Belgian producers feel let down (page 58), their January revival proving largely artificial. . . . British producers' first taste of a tariff was sweet, but on second thought (page 58), only 10 per cent is regarded as inadequate. . . . Exports of metalworking machinery from the United States hurdled all tariff walls in 1931 (page 61), expanding $1,000,000 while all industrial machinery exports were contracting $81,000,000.

Sheets Expand for New Use

Comparatively low cost and ease of erection and maintenance are compelling arguments for the use of partitions of expanded steel sheets (page 27). In the manufacture of this material, staggered slits are cut in sheets, which are then pulled out or expanded to form a diamond-shaped mesh. After the rough edges are ground off the material is ready for installation. . . . These sheets may originate in a Pittsburgh district mill where automatic catchers, consisting of small tilting tables with motor-driven conveyors are attached to both sides of a conventional type mill (page 31). The conveyors reverse in half a second; the mill makes 9 to 12 passes a minute.

Plates Simulate Land for Ocean Planes

Eight floating ocean airports at 500-mile intervals on the southerly track to Europe—this is the vision of an inventor who is completing financial arrangements for the first airport or ocean seadrome between New York and Bermuda (page 28). Seventeen thousand tons of steel, chiefly plates and shapes, will be required for each seadrome, a 6-acre landing deck, floating like a ship and securely anchored. . . . A less spectacular but more utilitarian use for plates is in the construction of tanks for storage of milk, ice cream mixtures or other dairy products, requiring specialized fabricating technique (page 23). These 7-ton tanks are corrosion-resisting or low-carbon steel, glass lined.

Telepoise Weighs on the Run

Jack of all trades in the steel industry is the photoelectric cell. Now, in conjunction with a radio amplifier, it is the brains of a new mechanism, christened the telepoise (page 26), which weighs with noteworthy accuracy a steady flow of material on a conveyor belt. . . . Telepoise is a new term for the English author, committed to improving the English of engineers, who has just revised his book (page 32) explaining the correct use of words and phrases in technical composition.

Former Merger Foes Vote For Dalton, Sheet & Tube Head

ELECTION of Henry G. Dalton as chairman of the Youngstown Sheet & Tube Co., Feb. 5, places in supreme position in the company's affairs a man who has been and still is committed, in principle, to its merger with the Bethlehem Steel Corp.

Mr. Dalton was one of the original proponents of the consolidation which was voted by the Sheet & Tube board in March, 1930, and was a staunch defender of the board's action all through the fight waged by Cyrus S. Eaton which resulted in an injunction in December, 1930, by the court of common pleas at Youngstown, O.

It has been assumed since the Sheet & Tube board prevailed on Mr. Dalton, a director and vice president, to take over the responsibilities of James A. Campbell, resigned, fresh impetus is given to a merger, but it can be stated authoritatively that no plan is now under way or contemplated looking to a revival of negotiations.

With substantial interests in Sheet & Tube still confident that a merger with Bethlehem would be to the company's advantage, it can, however, be accepted that the idea of a union between the two companies eventually has not been abandoned, but when negotiations again will reach an active stage, and from which side overtures may come, no one professes to know.

Confidence in Mr. Dalton

Shortly before the meeting of the Sheet & Tube directors, the executive committee met and decided to recommend Mr. Dalton for the chairmanship. This recommendation and the feeling that Mr. Dalton was in closer touch with the company's policies than any other executive led to his unanimous choice by the directors who attended the meeting.

Among these were S. Livington Mather and Hugh B. Wick, Cleveland, and George Brainerd, Youngstown, all of whom were associated with Mr. Eaton in opposition to the merger in 1930. George T. Bishop, Cleveland, who succeeded Mr. Eaton as head of Continental Shares, and later, on Mr. Eaton's resignation, was elected a member of the Sheet & Tube board, was not present.

In contrast with the clashes that marked some of the board meetings when the original merger plan was broached, the session Feb. 5 was entirely harmonious, and featured by expressions of confidence in Mr. Dalton. No allusions were made regarding future merger possibilities; apparently the subject was the farthest from the directors' thoughts. After the meeting it was announced that Frank Purnell would continue as president, and that there will be no change in the company's policies.

Important events have followed in swift succession since Judge David G. Jenkins issued a permanent injunction against the merger in December, 1930. Economic developments have changed the financial picture entirely; Mr. Dalton, it now develops, resigned from the Bethlehem board of directors last June, his membership in Bethlehem and Sheet & Tube at the same time having prompted criticism in the merger litigation.

In October last year Bethlehem canceled the contract with Sheet & Tube, as it had a right to do, though technically the appeal from Judge Jenkins' decision still is in court, never having been dismissed. In the same month Samuel Mather, senior partner in Pickands, Mather & Co., closely associated with Bethlehem and Sheet & Tube, died, leaving the major share of that company's responsibilities on Mr. Dalton.

Mr. Campbell's resignation, though long anticipated because of his ill health, came as a surprise. Obviously, there has been no time to consider new merger negotiations. Nevertheless, it was indicated to STEEL last week by one of the directors who formerly opposed a union with Bethlehem that "a new merger proposal under the right terms would go through."

"Though economies have been enforced in both companies, in common with all others, the tendency today is toward mergers," this director said. "Much good might be accomplished. It was against the terms and not the principle of the former merger that the objections were strongest. At the meeting in Youngstown we all felt that Mr. Dalton was the best qualified to head the company."

Further Wage Reductions Are Termed Inadvisable

Chicago—Any further general reductions in industrial wages now seem decidedly inadvisable, it is suggested by Prof. R. W. Stone, of the school of commerce and administration, University of Chicago, in an article on "Wage Policy in Depression" in the current issue of the *Journal of Business* of the university:

Since wages are nearly 50 per cent of the operating expense of railroads, reduced wage rates in that industry should effect substantial relief and increase employment. In the building trades, however, where labor costs are equally important, wage reductions probably would have little influence on building activity. In this field, as in many others, the most im-

Wide World Photo

USING STEEL IN A BENEFICENT CAUSE: San Francisco is relieving unemployment by building structures long contemplated—a health center, opera house and veterans memorial hall. Illustration shows the steelwork for the three buildings, which will be imposing units of its civic group plan, one of the most beautiful in the country. The help it thus affords to its own citizens extends far beyond its borders, benefiting to some degree every line of manufacture directly or remotely connected with building operations

portant factor restricting activity is the credit situation.

There is no reason for thinking that public works programs that may develop will serve to more than help to sustain the present level of business activity. Should the measures for expanding credit now under consideration by congress, or other methods that may be instituted, prove effective, the consequent rise in prices would automatically result in a reduction of real wages. Since steps resulting in credit expansion and rising prices are necessary to recovery, this is an additional reason for the decision that a general reduction in wages below present levels would be inadvisable.

Steel Corp. Revises Basis For Employe Stock Plan

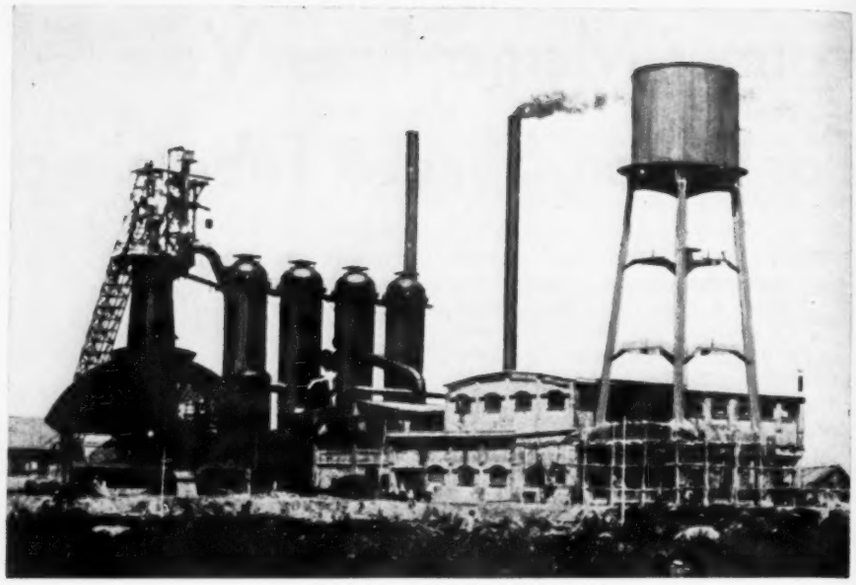
New York—The United States Steel Corp., in its recently noted stock subscription offer to employes, has revised the scale covering the maximum amount to which each employe is entitled to subscribe. As stated last week the amount purchasable by each employe is graded according to his pay. An employe receiving an annual salary of $300 or less is entitled to a maximum number of one share; and $300.01 to $500, two shares. There are various steps, ending with the right of an employe earning from $39,600.01 to $40,400 to subscribe to not more than 50 shares.

Compensation Rates Raised

Workmen's compensation insurance rates were raised an average of 19 per cent during the past year and will be increased another 1 per cent if pending revisions are approved, according to the National Industrial Conference board, New York. While partly due to changes in the laws, a serious problem was presented to the state rate-making bodies by the marked falling off in industrial payrolls. The rates were advanced mainly to wipe out a deficit in the premium income. All states have compensation laws except Arkansas, Florida, Mississippi and South Carolina.

Sells Merchant Mill

Cleveland — Cleveland Hardware Co., Cleveland, has sold its 10-inch merchant mill situated at 4518 Lakeside avenue, Cleveland, to the Sheffield Steel Corp., Kansas City, Mo., a subsidiary of American Rolling Mill Co., Middletown, O. The mill had a capacity of about 5900 tons of shapes for the Cleveland company's own use. The Sheffield company, in purchasing this equipment and moving it to Kansas City, will take over some of the Cleveland Hardware Co. trade in that district. The Cleveland Hardware Co. rolling mill was built in 1879 and rebuilt in 1891.



Courtesy, Perin Engineering Co.

A SMALL BLAST FURNACE IN A VAST COUNTRY: China, with a population of 400,000,000 has but 17 blast furnaces, seven of them controlled by the Japanese, who also control most of the Chinese iron ore deposits. This stack, with capacity for 100 tons daily, is operated by the Yangste Engineering Works at Hankow

The Business Week In Washington

REDISCOUNT restrictions of the federal reserve system would be softened and additional classes of paper made eligible as collateral security under terms of a bill introduced in the house and senate. Five banks must combine to give a promisory note when securities thus made eligible are rediscounted. For one year the $18,000,000,000 direct obligations of the treasury would be acceptable as collateral.

It is claimed that this bill, without inducing inflation, would greatly loosen credit. The fact that Senator Carter Glass is favorable augurs for the bill's passage. With the Reconstruction Finance Corp. functioning and the antihoarding campaign starting, the biil makes a triad of further emergency business relief measures.

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In January nearly $80,000,000 worth of public and semipublic construction work was awarded.

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Interstate commerce commission has upheld freight rates on cast iron pipe and fittings, in carloads, from Lansdale and Quakertown, Pa., Chattanooga, Tenn., and Bridgeton, Somerville and Florence, N. J., to destinations within 500 miles.

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Senate finance committee has made an adverse report on the Democratic tariff bill passed by the house, but the bill is on the senate calendar. No new rates are proposed; Democrats would weaken the power of the tariff commission and call an international tariff congress.

Valleys Again Stress Need Of Canalizing Rivers

A supplemental brief filed with the United States board of engineers for rivers and harbors by the Beaver, Mahoning and Shenango Rivers Improvement association, supporting canalization of these rivers to Warren, O., and Greenville, Pa., contends that this improvement would do for the Mahoning and Shenango valleys what the improvement of the Monongahela and Allegheny rivers did for Pittsburgh.

This canalization, it is claimed, would afford the relief made imperative by the increasing cost of assembling raw materials in the valleys and the increasing railroad freight rates on finished products. Through revival of the steel industry in the valley districts the entire country would benefit, is the claim of the association, of which T. J. Bray, former president of the Republic Iron & Steel Co., is president.

Business Is Better

FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis., is operating all machine departments 24 hours a day, 5½ days a week and assembling departments 8 hours a day, 5½ days a week, necessitated by the largest volume of commercial orders in the

company's history. The selling and advertising program has been increased.

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Burlington railroad will spend $23,000,000 for maintenance, improvements and extensions in 1932.

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To stimulate business, the Jamestown, N. Y., spring furniture show has been advanced to April 25-May 7.

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Tungsten Production Co. Inc., Nightingale, Nev., will increase the capacity of its mill from 200 to 500 tons daily. J. D. Maxwell, Fernley, Nev., is superintendent.

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Warner Gear Co., Muncie, Ind., has booked an order that will increase its staff from 1500 men to 2000 and put its three plants in full operation.

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Bendix Aviation Corp., South Bend, Ind., reports its airplane wheel and brake division plant is being operated on full. Sufficient orders are reported on hand to assure capacity operation until April 15.

Furnace, Oven Men To Meet

Pittsburgh—Eastern States Blast Furnace and Coke Oven association will meet at the William Penn hotel here Feb. 26. In the morning a round table discussion will be held by the two groups separately; in the afternoon there will be a joint meeting. A dinner at 6:30 p. m. will be dedicated to past presidents of the association.

Co-operative Research Held Imperative Need for Steel

STEEL producers will be called upon to devote as much attention to marketing problems as they have applied to problems of production, according to Charles F. Abbott, executive director, American Institute of Steel Construction Inc., New York, speaking Feb. 12 before the eighth annual conference of the Iron, Steel and Allied Industries of California, in session at Santa Barbara, Calif. Mr. Abbott advocated group market research and production for the steel industry.

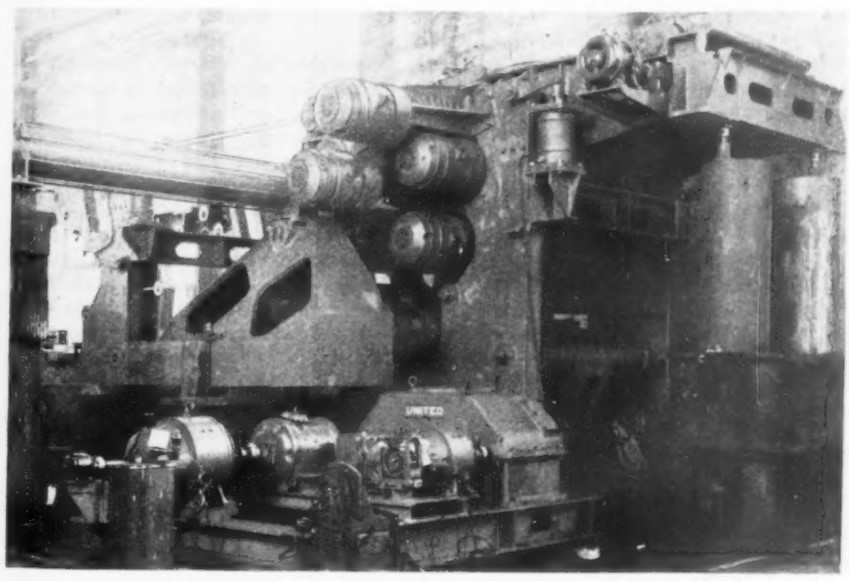
He quoted James A. Farrell as saying at the last meeting of the American Iron and Steel institute that "we have an immense consuming capacity and must discover means for increasing consumer demand."

In 1928, at a dinner of the Pioneers of American Industry, Charles M. Schwab emphasized the great need for organized co-operative effort in the steel industry. He recommended research on a large scale to be participated in by all steel producers, pooling their knowledge instead of relying upon individual initiative. Mr. Abbott said in part:

Indicative of what can be accomplished is the record established by the American Institute of Steel Construction through the limited means at its disposal. New uses for structural steel have been developed that represent potential markets estimated to be in excess of 14,000,000 tons. Other branches in the steel industry offer similar opportunities and once made available the problem of overproduction in the steel industry would be solved for some time to come.

Several steel companies working independently have made valuable contributions to technical research. These accomplishments indicate the greater progress that could be made if technical research could be conducted on a co-operative basis and for the benefit of the entire industry and the public. . . .

If the industry is to meet successfully its marketing problem and obtain the additional tonnage that is available, then it must proceed to develop a steel consciousness in the minds of people wherever steel is to be sold. Such an activity conducted on a co-operative basis by all producers would lift the burden from any one company.



NEW HOT STRIP REEL: United Engineering & Foundry Co., Pittsburgh, has just completed an order for several of these automatic reels, said to be of greater capacity than any previously operated. The machine works in conjunction with the type of continuous wide strip mill now coming into general use. It will handle a red-hot ribbon 100-inches wide at the highest speed of the mill that produces it, receiving, coiling and ejecting it automatically without manual operations. The maximum width four years ago was 48 inches

Fights Switching Rates

Chicago—Illinois commerce commission has filed with the interstate commerce commission at Washington a motion opposing action to proceed under section 13 of the interstate commerce act in acting on the increased Chicago switching district freight rates.

Chicago interstate switching rates were increased 1 to 2 cents late last year. The Illinois commission is opposing any action by the commission in Washington toward increasing intrastate rates, and exercising jurisdiction on intrastate traffic in the Chicago switching district.

Prefer Receiver to Sale

Elvin O. Frey, formerly president of the Harrisburg Pipe & Pipe Bending Co., Harrisburg, Pa., and William Foster, both of Philadelphia, have petitioned for a receiver for this company to avert possibility of its property being sold on foreclosure of a mortgage for $600,000.

Wrought Pipe Is Reduced

Philadelphia—Reading Iron Co. as of Feb. 15 reduced its price for standard weight, extra heavy and double extra heavy wrought iron pipe by 2 points of discount, Pittsburgh basing, with a like reduction in suggested minimum resale prices.

Cleanup of Bidding on Public Work Should Benefit Mills

CONTINUED abuses in bidding and operation of public works contracts have resulted in numerous definite efforts to eliminate questionable practices and clarify the situation by law. Subcontractors and sellers of materials, notably steel, structural, bars, pipe and scores of other metals entering into building construction, have been the chief sufferers—and in the case of irresponsible "contractors" generally without redress. The unsatisfactory conditions which have developed often filter back to the mill.

A new crop of so-called "contractors," often tinctured with politics, has been grown in the fertile field of public works, which for more than a year has furnished the backbone of demand for structural steel. Some contractors are hardly more than brokers, with little or no experience, capital or equipment, submitting ridiculously low bids which eliminate the legitimate general contractor.

"Chisels" Out a Low Price

Receiving the contract, which under the law is generally mandatory, providing he can get a bond and give lip or political satisfaction, this type of contractor shops among subcontractors and material firms, who are hungry for business. In the hard-boiled vernacular of the steel trade, this contractor "chisels" out a low price somewhere along the line.

If he collapses financially and is unable for other reasons to finish the work, an abandoned contract is the final chapter, with the subcontractor and steel seller holding the bag with a readvertised proposal "for completion" following. There are many oth er crooked channels in which these crafts cruise, but in general the above is the course.

There are scores of contractors who specialize in public work, especially federal, who have been tried and proved but who have suffered from this ruthless competition as well as the general contractor, who, lacking private contracts at this time, would enter the public works field if an opportunity were offered for a reasonable profit.

Signs are not lacking, however, that efforts are being made to check the irresponsible. New Jersey has been a leader. The highway commission of that state is now compiling questionnaires from all prospective bidders with a view to licensing and classifying contractors for general construction, grading, paving and bridge construction. These questionnaires cover in detail financial ability, experience and equipment. After March 1 bids will be received only from such licensed and classified contractors.

A bill is now pending at Washington which would provide for the protection of federal work subcontractors, material and supplymen, requiring the general contractor to name subcontractors and materials he plans to employ in the work. The bill is sponsored by Congressman Goss, of Connecticut, and provides for compensation to those injured by violators of the law on contracts in excess of $5000 if action is taken within a year. Similar protection is offered the general contractor. In general, the bill has many constructive features.

There is also a tendency among some states and federal departments to purchase structural and other steel separately, entering into contracts direct. The army engineers, an important buyer, recently adopted this plan. Steel will be bought by separate contract. New Jersey also has been a leader in this direction. For months that state has bought structural steel under separate contract arrangements.

Steel Interests Hampered

While planned as protection against the "shopping" contractor, fabricators have not taken full advantage of the law. This has worked well for the state, but the steel men, engulfed in sharp competition, have failed to take full advantage of the opportunity, bidding extremely low prices. In passing, it may also be noted, New Jersey highway commission requires a bond from subcontractors, the same bonded to the state direct.

Efforts to strengthen construction bidding situation have met with opposition. This is to be expected. Some months ago Westchester county, New York, proposed to take figures from a selected list of bidders. A protest and threatened court action followed with the dissatisfied pointing majestically to the law.

New York state has a number of abandoned contracts on which bids for completion of work are necessary, while New York city has had its share. Massachusetts has made efforts to favor contractors in that state and has been in the throes of a political row as to alleged undue influence. All this results in delay on already delayed public work. Abandoned contracts result in chaos with resultant unemployment.

In addition to the obvious efforts to correct the evils by law, is an apparent movement on the part of bonding companies to dig deeper and tighten up on bonding the irresponsible bidder.

Here and There In Industry

HARNISCHFEGER Corp., Milwaukee, has acquired manufacturing rights for the line of Hansen arc welders developed and marketed for some years by the Northwestern Mfg. Co., Milwaukee. Features claimed for these welders are simplicity and ease with which the arc can be maintained. The Harnischfeger Corp. will continue to produce the welder in the same range of sizes and with the same structural features, notably, single current control, the self exciter and the internal stabilizer. Klaus L. Hansen, inventor of the welder, has joined the Harnischfeger staff.

The Harnischfeger Corp. has had extensive experience in the manufacture of electric motors, controllers and other parts. For 45 years it has made a complete line of electric hoists and overhead cranes, for which it designed and manufactured the major electric equipment. More recently it has entered the welding field by introducing a line of welding fixtures known as position finders. Many steel parts for cranes and crawler-type excavators are welded in the company's plant.

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Allen-Bradley Co., Milwaukee, is holding an exposition of automatic electric control devices in the Engineering building, 205 West Wacker drive, Chicago. The exposition will last a month.

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Wrought Iron Co. of America has placed in operation at its Lebanon, Pa., plant a new hot dip galvanizing equipment installed by the E. L. Watrous Galvanizing Co., Chicago. With this equipment it is not necessary to recut threads after galvanizing. The company is galvanizing bolts, nuts, turnbuckles, pole line hardware and other products of its mill, and also is doing jobbing galvanizing.

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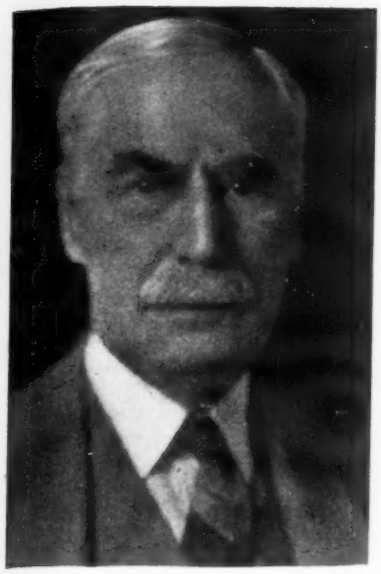
Weir Kilby Corp., Cincinnati, of which O. DeG. Vanderbilt is president, has taken over the entire business, name and goodwill of the Cincinnati Frog & Switch Co., Cincinnati. The plant of the latter will be dismantled and machinery and equipment sold piece by piece at public sale, Feb. 26,

(*Concluded on Page* 62)

Industrial Men in the Day's News

James A. Campbell, Now Chairman Emeritus, and Henry G. Dalton, Elected Chairman of the Board, Youngstown Sheet & Tube Co., Youngstown, O.



CAREERS of both men have been linked in the Youngstown Sheet & Tube Co. for the past 30 years.

MR. Campbell was the company's president during most of its existence; Mr. Dalton, a vice president.

MR. Dalton now succeeds to the post of chairman of the board which ill health forces Mr. Campbell to relinquish.

JAMES A. CAMPBELL, who at 77 has retired from the active chairmanship of the board of the Youngstown Sheet & Tube Co., Youngstown, O., was one of the founders of the company in 1900.

Continuously, from 1903 until 1930, he was the company's president, and since 1930 he has been chairman of the board. But due to recent ill health he tendered his resignation as chairman of the board and a director, Feb 6. Fellow directors in accepting his resignation, as evidence of their esteem, at the same time created the position of emeritus chairman of the board and elected him to that position.

Mr. Campbell was born at Ohltown, Trumbull county, O., Sept. 11, 1854. His initial connection with the Mahoning valley and its iron and steel industry dates from 1890, when he was superintendent of the Trumbull Iron Co., Warren, O. In succession, he was identified with the Union Iron & Steel Co., Pomeroy, O., Mahoning Valley Iron Co., Youngstown, and a district manager for six plants of Republic Iron & Steel Co., Youngstown.

From 1900 to 1903, when the Youngstown Iron Sheet & Tube Co., forerunner of the present Youngstown Sheet & Tube Co., was in its formative stages, Mr. Campbell was vice president and general manager.

Expansion of the Youngstown Sheet & Tube Co. has been in large measure attributed to Mr. Campbell. His great determination, untiring industry, and uncanny foresight have been outstanding in the steel industry.

HENRY G. DALTON, now chairman of the board of the Youngstown Sheet & Tube Co., Youngstown, O., next year will celebrate his fiftieth anniversary with Pickands, Mather & Co., Cleveland. In addition, he has been a director of the Youngstown Sheet & Tube Co. since 1902 and a vice president since 1904.

Essentially, however, Mr. Dalton's interests have been in lake shipping and iron ore. His rise in the industry from a boy of 16 on the ore docks to the supervision of activities and partnership in one of the largest iron ore, mining, pig iron and coal interests in the country, has been rapid.

He was born in Cleveland, Oct. 2, 1862, and in 1878 entered the employ of the Erie Ore Docks, Cleveland. Five years later his efficiency won the attention of Pickands, Mather & Co. officials and they employed him.

Today Mr. Dalton is senior partner in the firm, chairman of the Interlake Iron Corp., president of the Interlake Steamship Co., and through Pickands, Mather & Co., is engaged in the mining, selling and shipping of iron ore of which the Youngstown Sheet & Tube Co. has been a large consumer for years.

Mr. Dalton's other steel interests have been numerous, including directorships at one time in Central Alloy Steel Corp., Massillon, O., and the Steel Co. of Canada, Hamilton, Ont. For a number of years he was a director of Bethlehem Steel Corp., but recently resigned that post.

W. W. COLE, formerly manager of structural and plate sales for the Bethlehem Steel Co. at Cincinnati, has been transferred to the home offices at Bethlehem, Pa., in charge of sales of flanged products. He is succeeded by Charles Mackall.

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W. A. Olen, president and general manufacturer of the Four Wheel Drive Auto Co., Clintonville, Wis., has been elected a director of the manufacturers' division of the American Road Builders' association.

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Frank J. DuMars has joined the sales staff of the machine and small tools divisions of Barber-Coleman Co., Rockford, Ill., as representative for the central western states, specializing in dies, jigs, and fixtures. Mr. DuMars was previously connected with Reynolds Engineering Co., Rock Island, Ill., in a sales capacity.

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Paul Crouse, assistant manager at the Anderson, Ind., plant of the Ames-Baldwin-Wyoming Shovel Co., Boston, has left for North Easton,

Mass., where he wil be conected with a unit of the company there. E. T. Nipher, former manager of the Anderson plant and now stationed at Parkersburg, W. Va., is expected to return to Anderson.

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R. M. Patrick has been appointed district manager at St. Louis for the Atlas Car & Mfg. Co., Cleveland.

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Harry K. Ellis, formerly asssociated with the Phoenix Bridge Co., Phoenixville, Pa., has been appointed engineer for Chester county, Pennsylvania.

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J. A. Beckman was re-elected president at the recent annual meeting of the Jamestown Metal Desk Co., Jamestown, N. Y.

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Daniel Tomlinson, president, and all other officers of the Batavia Metal Products Co., Batavia, N. Y., were re-elected at the company's annual meeting Feb. 9.

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C. L. Jones has been appointed sales manager for Wilson Welder & Metals Co. Inc., North Bergen, N. J. He was formerly with Air Reduction Sales Co. Inc., New York.

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George E. Dix, president, Steel Union Co. Inc., New York, and American representative of the United Steel Works Corp. of Germany, sailed last week for a brief visit to England and the Continent.

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Mack Ryan has been elected a director to fill a vacancy of the Gemmer Mfg. Co., Detroit, maker of automobile gears and parts. Other directors and officers were re-elected at the annual meeting.

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H. E. Galvin, who has been associated with Crane-Schiefer-Owens Inc., Buffalo, machinery dealer, resigned recently to start a similar business to be known as Galvin Machinery Sales, with offices at 500 Brisbane building, Buffalo.

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B. F. McIntyre, formerly with the Industrial Controller Co., Milwaukee, is now connected with the Chicago office of the Lincoln Electric Co., Cleveland, in charge of motor sales in the Chicago district.

Fred Archer, formerly president of Fred Archer Inc. and previously with the White and Kelly-Springfield companies, has been placed in charge of motor sales of the Lincoln company in the Philadelphia district.

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Thomas S. Hammond, president of Whiting Corp., Harvey, Ill., and first vice president of the Illinois Manufacturers' association, and a number of other Chicago business and industrial men have been in Washington for several days urging local members of congress to help bring about a reduction in costs of government.

Among others in the party were Harold C. Smith, president of the Illinois Tool Works, Chicago; Benjamin F. Affleck, president of the Universal Atlas Cement Co., Chicago; D. A. Crawford, president of the Pullman Co., Chicago.

Hammond Is Nominated for President of A. F. A.

A nominating committee of the American Foundrymen's association has nominated the following members for officers and directors, for election at the Philadelphia convention, May 2-6: For president to serve one year, T. S. Hammond, president, Whiting Corp., Harvey, Ill.; for vice president to serve one year, Frank J. Lanahan, president, Fort Pitt Malleable Iron Co., Pittsburgh; for directors to serve 3-year terms each, E. H. Ballard, general foundry and pattern shop superintendent, General Electric Co., West Lynn, Mass., H. Bornstein, director, testing and research laboratories, Deere & Co., Moline, Ill., S. B. Cuthbert, superintendent of foundries, Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa., David Evans, president, Chicago Steel Foundry Co., Chicago, and Franklin G. Smith, president, Osborn Mfg. Co., Cleveland.

Labor Productivity in Sheet Mills Increased

Labor productivity in sheet mills has shown a substantial increase in all departments except annealing, the bureau of labor statistics reports, carrying along a survey begun in 1925. Reasons ascribed for the gains are: "Substitution of machinery for labor, improved management, introduction of special piecework and bonus systems, installation of continuous pair and sheet furnaces in the hot mills, more efficient cooling of rolls, better motors and other machinery, improved lighting systems, improved conveyor systems, straight-line production, and better working conditions."

A 10 per cent decrease in the annealing department, 1925 to 1929, is ascribed to "extra labor time required to meet the increasing demand for full finished sheets of special quality and grade.

The bar shearing department shows largest gain, 16 per cent; cold-rolling and sheet-pickling, 12 per cent each; and hot-rolling, 10 per cent. Average output per man-hour in 1929 was as follows: Bar shearing, 2.2 net tons; hot-rolling, 0.07; cold-rolling, 1.48; annealing, 1.3; pickling, 0.8.

Obituaries

LEWIS LEADS TATUM, 58, purchasing agent of Cutler-Hammer Inc., Milwaukee, from 1923 to 1930, and previously assistant chief engineer, died Feb. 7 after a long illness. He was graduated from Cornell university with a degree in electrical engineering in 1897. He joined the engineering staff of the Bullock Electrical Mfg. Co., Cincinnati, immediately after graduation and remained until 1906, when he joined Cutler-Hammer.

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Edward W. Beach, 76, dairy machinery manufacturer and vice president of the De Laval Separator Co., Chicago, died Feb. 10 at Winnetka.

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James D. Downing, 68, founder and first president of the Meadville Malleable Iron Co.. Meadville, Pa., died at Washington Feb. 4. Mr. Downing had retired from active business life about ten years ago.

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Dr. John Brown Herreshoff, 81, one of the leading metallurgical chemists in the United States, and past president of the American Chemical society, died at Atlanta, Ga., Jan. 30.

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Frederick Erbe, 49, secretary of the Yawman & Erbe Manufacturing Co., Rochester, N. Y., died Feb. 5 at Rochester. He was a director of the Office Specialty Mfg. Co., Toronto, Ont. His death came within five months of that of his father, Gustav Erbe, one of the founders of the company.

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Dr. Augustus F. House, 84, a close business associate of W. B. Alexander, with whom he helped form the National Screw & Tack Co., Cleveland, and the then affiliate National Acme Mfg. Co., Cleveland, died at Los Angeles Feb. 2. He was formerly a director in the two companies.

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Dr. Harold B. Smith, 62, for 35 years head of the electrical engineering department of Worcester Polytechnic institute, Worcester, Mass., and a former president of the American Institute of Electrical Engineers, died Feb. 8 at Worcester. Since 1905 he has also been a designer and consultant of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Navy Buys Rivet Steel

Washington—Navy department has awarded Youngstown Sheet & Tube Co. the contract for rivet steel, delivered at eastern yards, totaling $3460.65, and to the Pacific Coast Steel Corp. for western yards at $3341.64.

MIRRORS of MOTORDOM

DETROIT

HENRY FORD has finally made the commitment that his new line will consist of a V-eight and a revised four, with engines interchangeable in the same chassis, bodies longer and roomier, and —inferentially—prices lower.

Actually, Mr. Ford has done no more than confirm reports current for many weeks and persistently relayed in these columns. The effect, however, is to clear the atmosphere and remove the pressure from other automobile manufacturers in the low-price field.

The assumption is that the new models will be displayed in March. A few cars, virtually hand made, may be ready shortly, but it will be some weeks before anything approaching quantity production is attained. Up to the end of last week, no steel or parts other than pickup requirements had been placed.

Late last year, when it appeared that the revised four would be put into production, Ford purchasing officials took figures on an unstated requirement for sheets, strip and other steel products. Because the revised four was shelved temporarily, no buying was done on the basis of figures submitted then.

Ford To Take Steel Bids

It can be authoritatively stated that new figures will be taken. For one reason, a quarter has turned since the former ones were taken. And for another, much of the material for quantity production, which Mr. Ford's statement indicates, will be for delivery in the second quarter. Almost daily, steel sellers may be asked to submit new prices, but to the end of last week nothing definite had developed.

At the main Ford plant in Detroit, no outward steps for quantity production are discerniible. A fifth open-hearth steel furnace—the 400-ton unit for melting junked cars—has been lighted; the rolling mill is scheduled several days a week; some drop forge departments are operating. Unbalanced banks of some parts for the new models have been accumulated.

In Detroit the effect of Mr. Ford's statement is magical, even though it lacks definiteness except that the new line will consist of a four and an eight. It is assumed that the retail market for automobiles looks promising, else Mr. Ford would not have made this commitment at this time. Steel sellers are aware, however, that some little time may elapse before actual orders for material for the new models are released.

February Output Down

This publication's estimate of January passenger car and truck production at 125,000 units is substantiated by the National Automobile Chamber of Commerce estimate of 126,518. With it highly improbable that Ford will contribute any production to February, and many manufacturers slowing down after having stocked their dealers, February output probably will be lower than that of January.

The trend in March is largely dependent upon Ford. It may be assumed that he will be in partial production. While some Ford sales doubtless will be at the expense of other makers in the low-price field, nevertheless, the fact that the Ford competition is known will expedite decisions from prospective buyers who have been deterred by the uncertainty over Ford.

Conceding some support in March to Ford, it nevertheless appears doubtful whether first quarter assemblies of passenger cars and trucks in the United States alone will exceed 400,000 units, compared with 1,000,023 in the first quarter of last year.

Chevrolet and Buick, for a number of weeks mainstays of production, are retrenching. Chevrolet, assembling about 8000 units weekly, has deferred shipping dates on some steel releases. Buick is now on a 3-day week, assembling 375 units daily. Buick stole from Plymouth third place in registrations in January in many states.

Olds, with a schedule of 4000 units in February, is showing relatively greater strength, at the moment, than other General Motors lines. Putting the Pontiac label on the revised Oakland eight has worked no magic, as sales of the six exceed those of the eight by a wide margin.

DeSoto and Plymouth, chief steel consumers in the Chrysler lines, are maintaining fair schedules. It is understood that work on the new Plymouth will proceed without waiting for the new Ford and that the changes will be chiefly in the body.

On the new Nash models, expected to be introduced in March, there are said to be no square corners. Bodies will be of the modified teardrop design and while the hood is straight it gives the illusion of being slanting. An increase in the curve of the rear fenders will greatly shorten the running boards. At least one line is said to be no higher than 5 feet, 10 inches.

Tires Will Match Car

Essex has encountered a relatively better reception than Hudson. . . . Great Lakes Steel Corp. now is operating three of its six open-hearth furnaces. . . .Goodrich plans to introduce "colorweld" tires, the color matching the car. . . . Cadillac is experimenting with tires with 10-pound pressure on wheels with no spokes and frames with no shock absorbers. . . . DeVaux-Hall, in receivership, offered its Oakland, Calif., plant to Chrysler for $1,500,000; Chrysler countered with $900,000, which was refused, then started to build at Los Angeles.

EDITORIAL

Fight With—Not Against—Constructive Forces

IF SIGNS of the past few weeks are trustworthy, the United States now is entering an interesting and perhaps the most important stage of the depression. For the first time in many months the major attention of the principal constructive forces in the nation is centered upon a single objective. Problems of international debts, tariffs, freight rates, wages, etc., which for many weeks pressed for consideration and solution, have been attended to or swept aside for the moment. Today the agencies lined up against the common foe of credit stringency represent the strongest mobilized force for united action that has been available at any time during this depression.

This does not mean that opinion is unanimously supporting the present measures for correcting the credit situation. There still remain numerous shades of thought as to what is required to loosen the key log in the credit jam. The debate between the inflationists and the deflationists has not abated. Representatives of one school of thought remain steadfast in their belief that we must allow matters to drift until the turning point arrives by its own natural course. Others declare that deflation already has passed the point of reason or necessity. One group is convinced that up to last September the depression was the reaction to be expected as a result of the inflation of 1928 and 1929, but that since that month the continued declines have been due to unreasoning fear.

Impending Drive Is Well Organized; Has Powerful Weapons

Time alone can determine which, if any, of these conflicting views is correct. We do know, however, that since last summer two definite attempts have been made to stem the tide of business recession and both have failed. Business sentiment responded vigorously to the moratorium on war debts, but the resultant upswing was dashed when England went off the gold standard. Another promising impetus was furnished by the National Credit Corp., and while it served to avert a critical financial panic, it fell far short of restoring confidence.

And now comes a third and much better organized attempt to restore confidence. The Reconstruction Finance Corp., the modification in the eligibility provisions of the Federal Reserve act, the proposed anti-hoarding campaign and the various other measures intended to expand credit without undue inflation represent the heavy artillery mobilized for the impending drive. Will this gigantic effort succeed wherein its predecessors failed?

The answer is of great importance to the nation. Failure probably but not necessarily will mean that the depression will continue until the country has tasted the bitter dregs of deflation to the last drop. Success may mean that a gradual recovery to higher ground can be expected. In either event ultimate recovery is certain. The element of time and the degree of suffering are the essential differences between success and failure.

Security of Thousands of Companies Depends on Outcome

It would seem that American industry can well afford to support this impending attack. To thousands of industrial corporations that cannot survive another year under present conditions this supreme effort of the country to restore confidence is a gamble of life against bankruptcy. To other more fortunate thousands it is a gamble of early return to profitable operations against a prolonged period of pauperism.

Therefore is it not better for all concerned—regardless of what individual reservations one may hold as to time, method or detail of solving the credit problem—to lend full support to the program now in process of execution?

What is to be gained by predicting (as some presumably well informed individuals have done) that stocks will go to half or one-third their present levels? What good can possibly come from a policy which would permit more banks with good securities to fail because of unwarranted runs caused by uncontrollable fear? With wholesale commodity prices now down to 1901 levels, what merit can there be in a passive attitude which acts to depress them to still lower depths?

American industry is sick and tired of half-baked expedients. Perhaps the present program is not entirely perfect in conception and timing but it is vastly superior on every count to anything that has been tried.

At no time in the depression have courage and stamina been as essential as at this very moment. Now is the time to fight—with and not against the forces of reconstruction!

THE BUSINESS TREND

Business Fights To Hold Gains of January

NOW that a few of the major statistics for January are available, we have factual evidence that the improvement in the first month of the year was slight. Daily average of pig iron production was off by an insignificant 300 tons, but four more stacks were added to the active list, marking the first increase in 10 months.

Steel ingot production has risen from 23.58 to 26.54 per cent of capacity. Revenue freight car loadings rose moderately in the first few weeks and then dipped slightly in the last two weeks of the month. Unfilled orders of the United States Steel Corp. on Jan. 31 totaled 2,648,150 tons, a loss of 87,203 tons during the month. The total on Jan. 31, 1931 was 4,132,351.

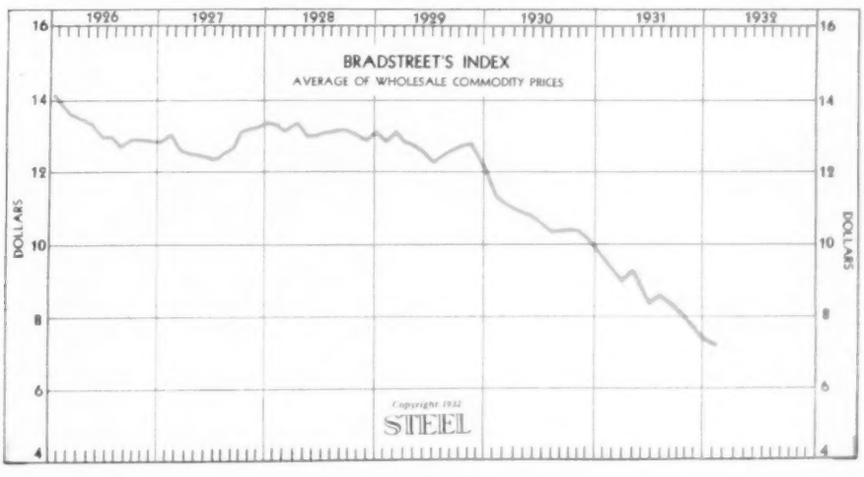
At the midway point in February, steelworks operations at around 28-29 per cent of capacity are just about holding the slight gains made in January. Railroad purchasing resulting from wage adjustments is expected but at this writing has not materialized. Inactivity of Ford Motor has put the brakes on specifications from the automobile industry.

Meanwhile commodity prices are steadily slipping to lower levels. Bradstreet's index, which is the sum total of the prices per pound of 96 articles in common use, on Feb. 1 stood at $7.52. This is 21 cents below the Jan. 1 figure and is the lowest point of the index since July, 1901, when it registered $7.51. Only a slight further drop is required to carry this barometer to the all-time record lows which prevailed during the last five or six years of the nineteenth century.

Stage Is Set for Major Offensive Against Congealed Credit

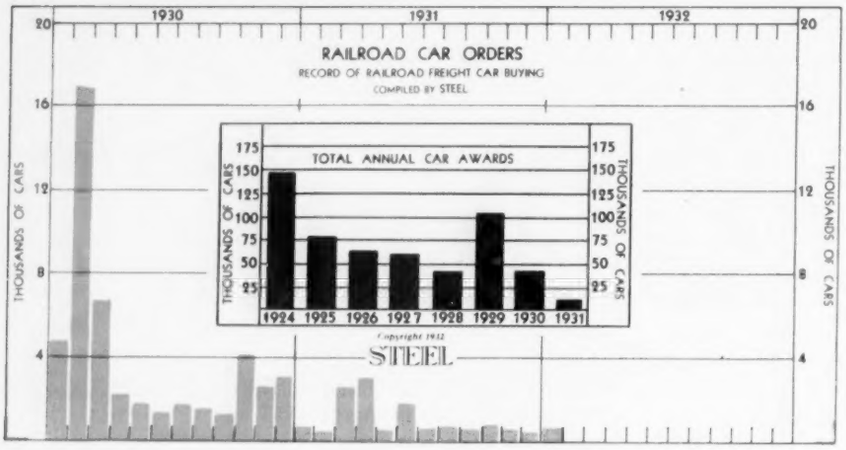
The impetus for a sustained expansion in activity has not yet appeared. The business world now is watching for the effect of the federal credit plans. For the moment attention has been deflected from foreign troubles. The railroad wage problem is settled. Domestic credit problems have the stage more exclusively than at any time in this period. Two Chicagoans—General Dawes and Colonel Knox—are in the spotlight.

Can they break the credit jam? Will the impending drive against congealed credit, hoarding, etc. succeed? It is the most important question now before business.



1932	
Feb. 1	$7.52
Jan. 1	7.73
1931	
Dec. 1	$7.91
Nov. 1	8.09
Oct. 1	8.30
Sept. 1	8.49

1931	
Feb. 1	$9.31
Jan. 1	9.51
1930	
Dec. 1	$9.84
Nov. 1	10.06
Oct. 1	10.30
Sept. 1	10.43



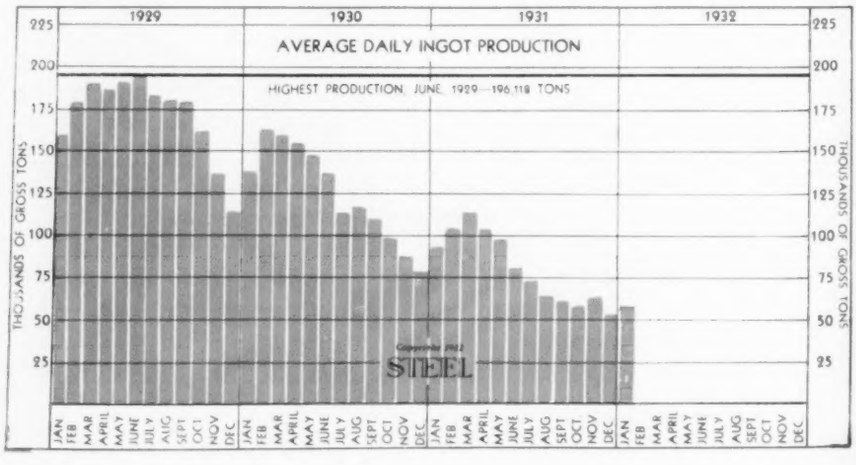
	1932	1931
Jan.	159	100
	1931	**1930**
Dec.	11	2,729
Nov.	35	2,621
Oct.	780	4,116
Sept.	503	576
Aug.	1,104	1,111
July	367	1,389

More Freight Cars Ordered, But Totals Are Far Below Normal

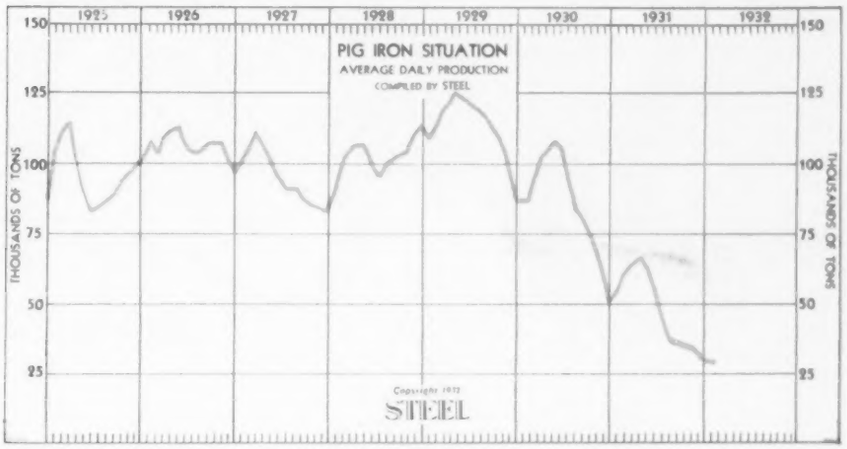
Awards for domestic freight cars in January totaled 159 cars, a sizable recovery from the negligible total of 11 cars in December, and a gain over January last year when awards amounted to only 100 cars. The Chicago wage adjustment has improved sentiment in railroad supply circles and sellers of railroad supplies are expecting an improvement. Car builders are less hopeful, and look for little substantial business over the next few months. Activity in recent months has been as low as in the slack months of 1921, and until the volume of freight traffic increases considerably the policy of the carriers will be to repair existing rolling stock rather than to purchase new equipment.

Gain in Steel Ingot Output Erases Half of December Loss

Production of steel ingots in January regained about half of the sharp losses sustained in December. It will be remembered that output receded gradually in 1931 until a point of 27.72 per cent of capacity was reached in October. In November production climbed back to a rate of 30.01 per cent. In December, the year-end slump carried the rate down to 23.58 per cent. January's average of 26.54, therefore, is equivalent to a gain of half of December's loss. If operations continue to hold during the next two weeks as they have in the first half of the month, February steel output will be on a par with that of last September or October. Daily average output gained 6000 tons in January.



	1932	1931
Jan.	56,203	91,063
	1931	**1930**
Dec.	50,092	76,136
Nov.	63,747	88,489
Oct.	58,977	99,724
Sept.	59,523	109,205
Aug.	66,133	117,722



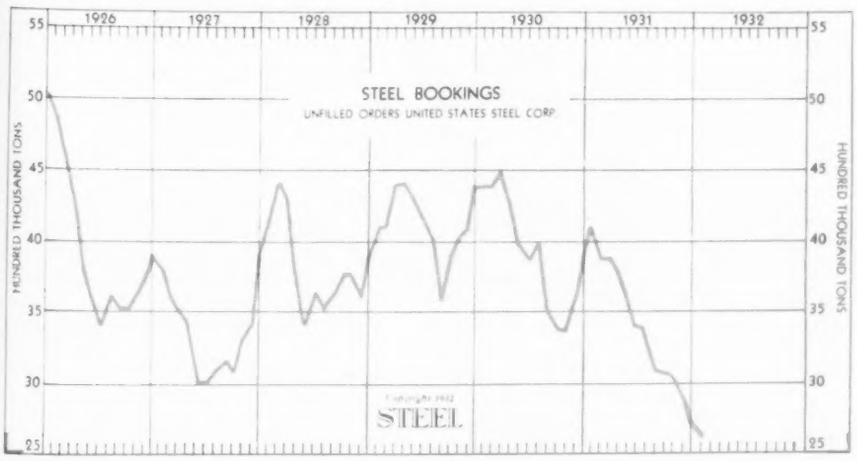
	1932	1931
Jan.	31,336	55,337
	1931	**1930**
Dec.	31,694	53,732
Nov.	36,727	62,128
Oct.	37,831	69,851
Sept.	38,947	75,893
Aug.	41,264	81,455

Pig Iron Production Off, But Four Active Stacks Are Added

While pig iron output in January was at the rate of only 21.8 per cent of capacity and the average daily output was about 300 tons less than in December, the effect of this recession is somewhat offset by a gain of four stacks to the active list. The slightly lower output in January is explained by the shutting down of 10 furnaces in December and the curtailed schedules of certain stacks in operation. The daily average, 31,336 tons, is the lowest since August, 1921, but is still more than 3000 tons above the all-time low of 27,892 tons in July, 1921. Blast furnaces operating on Jan. 31 numbered 61 as compared with 57 on Dec. 30. This is the first gain since last March.

Backlog of Steel Bookings Shrinks For Tenth Consecutive Month

Unfilled bookings of the United States Steel Corp. as of Jan. 31 totaled 2,648,150 tons, the lowest figure since the corporation started issuing these reports in June, 1902. The nearest approach to the current low record was the 2,674,757 tons on the books on Dec. 31, 1910. Unfilled orders at the end of January represented only a moderate loss from the previous month's total—in fact the drop in January was far less than those of December and November, 1931. Losses in the total unfilled bookings now have appeared in 10 consecutive months. In January last year a gain of 188,000 tons was recorded. A large loss in February and a small gain in March were followed by unbroken losses to date.



	Million Tons	
	1932	**1931**
Jan.	2,648	4,132
	1931	**1930**
Dec.	2,735	3,943
Nov.	2,933	3,639
Oct.	3,119	3,481
Sept.	3,114	3,424

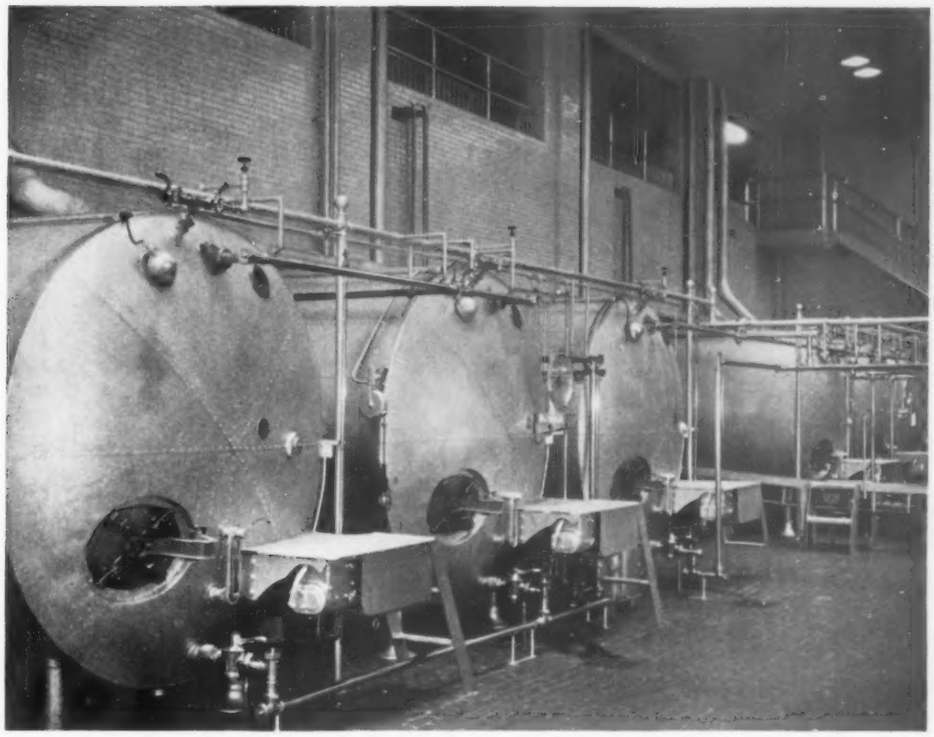
GAS FOR HEAT WHEREVER HEAT IS NEEDED

CORE BAKING . . .

MORE and more foundries are coming inevitably to the use of gas heat for core and mold drying. They know gas is quicker, more thorough, more dependable—and best of all, less expensive than any other fuels. The new book "Gas Heat in Industry" tells all.

AMERICAN Gas ASSOCIATION

420 Lexington Avenue, New York



MILK — 24,000 gallons of it — is kept in these six glass-lined steel storage tanks installed by a Chicago dairy. Modern dairy sanitation is exemplified by the spotless appearance of the equipment and surroundings

Fabrication of Large Dairy Tanks Demands Expert Technique

BY L. E. BROWNE
Associate Editor, STEEL

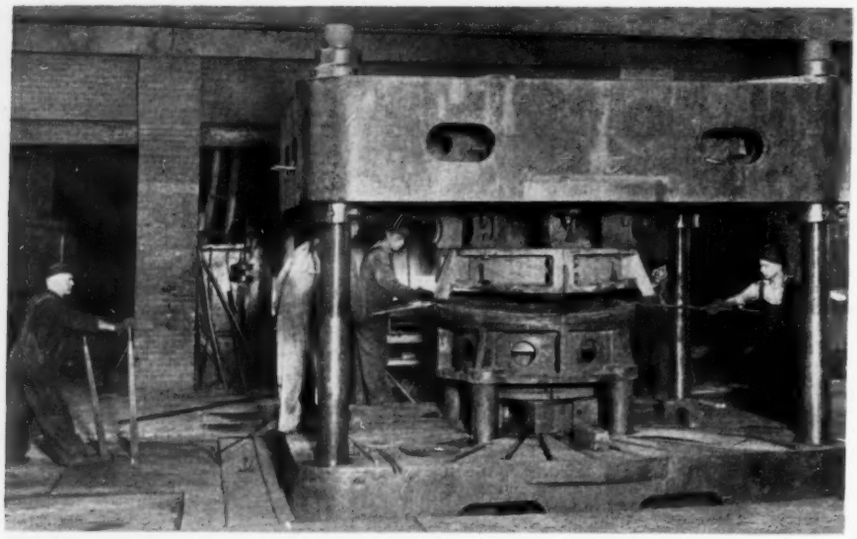
INCREASED efficiency in distribution of milk in bulk, more stringent sanitation laws pertaining to pasteurization, and especially the nation's greater appetite for ice cream, have contributed to the increasing use of low-carbon steel, alloy steel and specialty metals in large storage tanks, both glass-lined and non-corrosive metal types. The construction of both of these types involves interesting fabricating features, the latter, usually of chrome-nickel steel, especially requiring expert welding technique. The dairy industry long has been a leader in the use of special alloy steels for these tanks, while the ice cream industry followed much as a matter of course since the two industries are allied closely.

The Pfaudler Co., with plants at Rochester, N. Y., and Elyria, O., and a third in Germany, is active in the fabrication of these large tank units and recently sold 16, ranging from 1000 to 5000 gallons capacity, to the Reid Ice Cream Co., New York, subsidiary of the Borden Co. These tanks are constructed of Enduro KA2S chrome-nickel steel plates, No. 10-11 gage, supplied by the Republic Steel Corp., Youngstown, O., and fabricated at the Rochester plant of the Pfaudler company. The tanks weigh from 2 to 5 tons each and all are seamless welded, both the girth at heads and longitudinally.

These 16 tanks, it is reported, required the largest single order of corrosion-resisting steel ever placed for dairy tank work. They are to be used for milk and ice cream mixtures before freezing, pipes leading directly from the tanks to freezers. The tanks are of the horizontal type with dished heads.

Heads are seamless pressed and all fittings are welded to swaged punched openings, making the tank seamless inside and out. Specialists are employed in the welding operations, who are familiar with the technique involved in the welding of chrome-nickel steel.

The Pfaudler Co. is a pioneer in the manufacture of glass-lined steel tanks, employing a special analysis low-carbon open-hearth steel plate, subjected to rigid laboratory inspection before use. These tanks also are seamless



Hydraulic press used for dishing tank heads. Heating furnace in background

welded, being fabricated completely before the glass lining is applied to them.

The glass lining is sprayed on the interior of the tank cold, allowed to dry, and then fused in furnaces at temperatures ranging from 1600 to 2000 degrees Fahr. Two to five coats are applied, each succeeding coat receiving heat treatment before the next application. Special enamels have been developed, three basic types being for the dairy, chemical and brewery trades, although special mixtures are available for other requirements. The enamel is fused into the steel and is subject to the same physical changes due to temperatures and pressures.

Plates used in the glass-lined tanks are from ¼ to ⅝-inch thickness, depending upon capacity of the tank. A 1000-gallon tank weighs slightly in excess of 2½ tons, while a 4000-gallon tank weighs nearly 7 tons.

Most of the glass-lined units are of the horizontal type and are made of single-shell or jacketed construction. The tank which may be classed as standard is lined with blue-glass enamel, insulated with 2-inch cork board. Outside sheathing is 18-gage copper-bearing sheets, soldered, welded or screw joined.

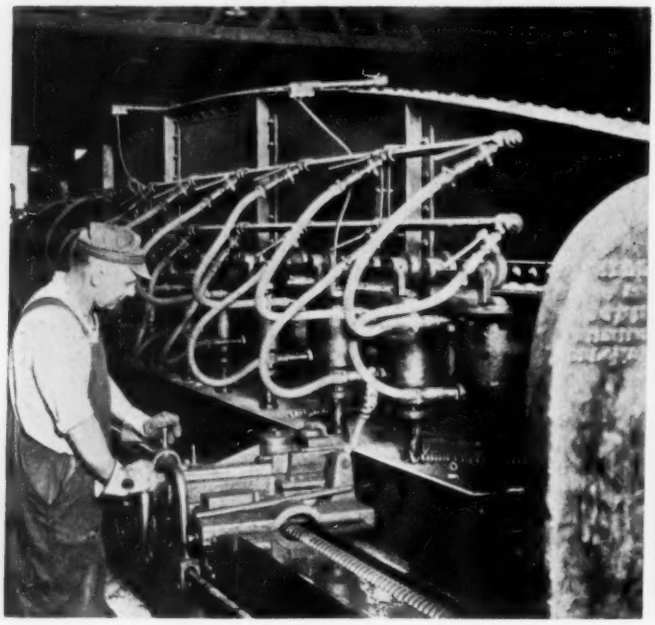
Fittings are welded to the tank and are usually of corrosion-resisting steel, monel metal or gun-metal. Such fittings include manhole with inside-swing door, observation glass, electric light fixture, sanitary milk inlet, straightway sanitary valve, recording thermometer, relief valve, pressure gage, agitator drive, spray nozzle and air vent. The tank is provided with standard supporting lugs with adjustable pipe legs, the exterior surface being painted with high quality machinery enamel.

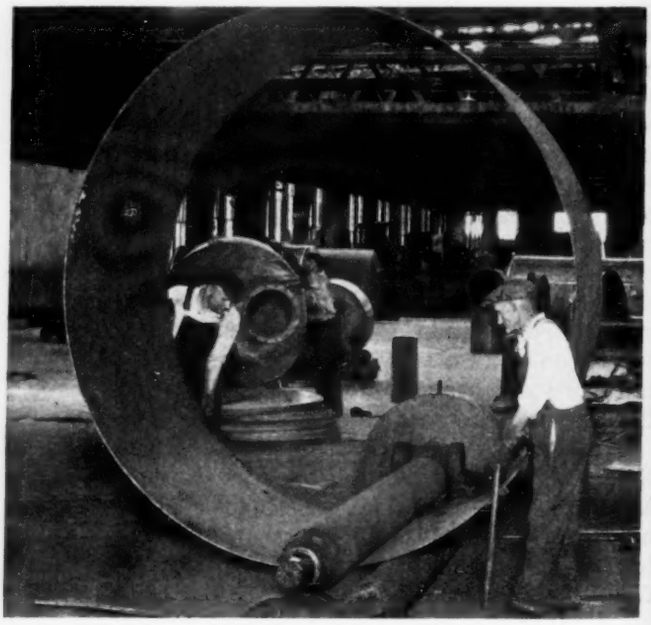
Principal metalworking features of tank construction are shown in accompanying illustrations. These include beveling edges of the plate to form a groove for the welding bead, rolling the plate to cylindrical form, welding the seam and welding on the heads. Heads are dished in a large hydraulic press, the excess flange being trimmed off by oxyacetylene torch in a special machine adapted to this work, shown in the illustration at the top of page 25.

EDGES of flat sheets or plates are beveled (left) by a traveling tool carriage as the material is clamped under a row of air jacks. The plate then is rolled to cylindrical form (right) and is ready for welding

Large Order Booked

The Pfaudler organization recently booked the largest single tank order ever placed, from the Dairymen's League Co-operative association, New York, comprising thirty-three 4000-gallon and twelve 3000-gallon glass-lined steel storage tanks, total capacity 170,000 gallons, and scheduled for shipment in the early spring. The 4000-gallon tanks are 96 inches inside diameter by 125 inches on the straightside; heads are approximately 9 inches deep. The 3000-gallon tanks have corresponding dimensions of 84 inches by 125 inches, with heads 7 inches deep. The tanks are equipped with tinned bronze fittings. The Dairymen's League already has 316,900 gallons storage capacity in glass-lined steel tanks, and the recent order will raise this total to nearly half a million gallons, or 4,000,000 pints. This amount of milk represents nearly a two weeks' supply for every person in





a city the size of Rochester, N. Y., assuming each person consumed one pint a day.

Lock Washer Standards Are Ready for Criticism

The proposed American tentative standard for lock washers has been released to industry for general criticism and comment. This proposed standard was developed by a subcommittee of the sectional committee on the standardization of plain and lock washers organized in 1926 under procedure of the American Standards association and sponsored by the American Society of Mechanical Engineers and Society of Automotive Engineers.

In addition to introductory notes, the proposed standard contains a table of dimensions for lock washers (spring washers), giving the nominal size, actual inside diameter, dimensions for washers for use with wrench head bolts and nuts, and slotted head screws.

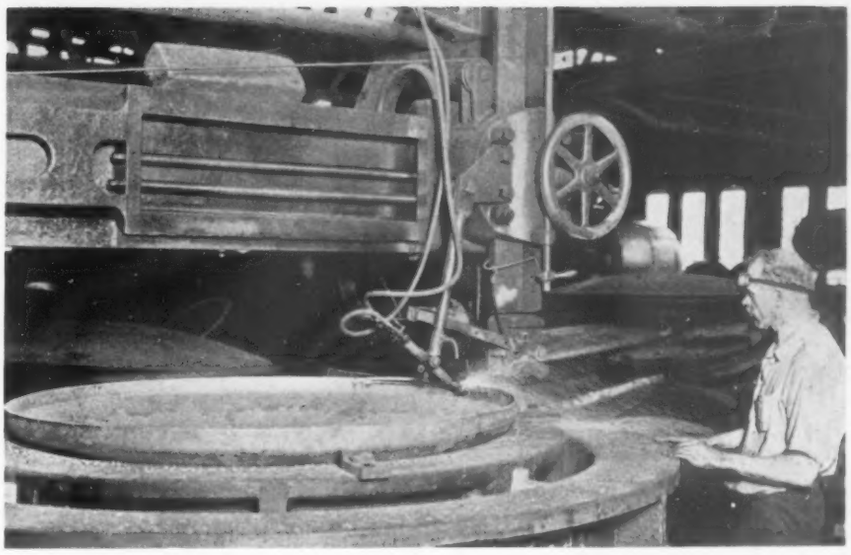
Requests for copies of the draft for examination should be addressed to C. B. LePage, assistant secretary, American Society of Mechanical Engineers, 29 West Thirty-ninth street, New York.

Heating Equipment, Methods Discussed at Conference

Use of powdered coal, oil, gas and electricity as fuels in various industrial heating processes were discussed at the conference on industrial process heating held Feb. 10-12 at Case School of Applied Science, Cleveland, in cooperation with the Cleveland Engineering society. Refractories, insulation materials and furnace equipment also were included as subjects of papers, 18 of which were presented at the three-day meeting. An exhibit of furnace and control equipment was held in conjunction with the conference, a number of leading manufacturers being represented.

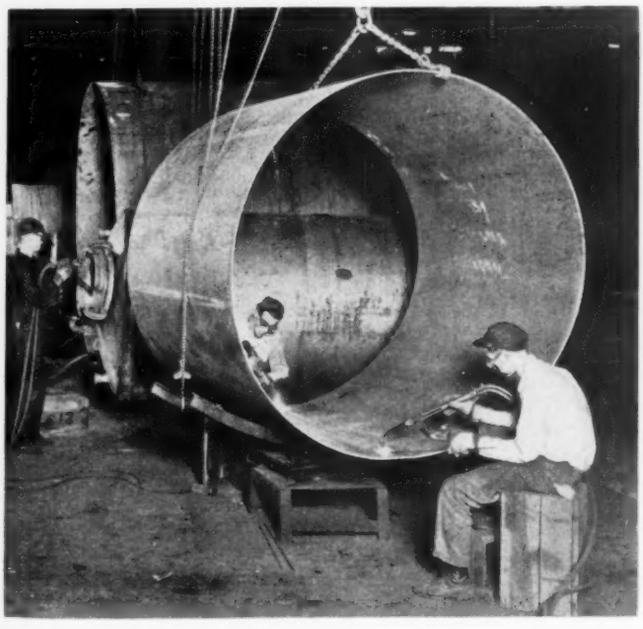
O. L. Day, Harbison-Walker Refractories Co., Pittsburgh, spoke on "Refractories—Recent Types, Uses and Unit Costs." Refractories research problems and future needs were outlined by J. P. Raugh, General Refractories Co., Philadelphia. A subject to which much importance is being attached currently is the control of atmosphere in industrial furnaces. H. J. Babcock, General Electric Co., Schenectady, N. Y., described a number of applications of atmospheric control in heat treating furnaces.

"Application of Surface Combustion to Process Heating," by E. G. deCoriolis, Surface Combustion Corp., Toledo, O.; "Carburizing and Heat Treating Furnaces," by W. H. Kelsey, Industrial Heating Mfg. Co., Cleveland; "The Economics of Electric Furnaces versus Fuel Furnaces," by Wirt S. Scott, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; "The Electric Induction Furnace," by F. T. Chestnut, Ajax Electrothermic Corp., Trenton, N. J.; "Insulation Materials for Industrial Furnaces," by J. W. Blemker, Johns-Manville Co., New York; and "Powdered Coal for Process Heating," by C. R. McClure, Babcock & Wilcox Co., New York, were other important papers.



Trimming off excess flange on tank head by means of oxyacetylene torch

THE rolled form is gas welded (left), the V formed by the abutting beveled edges providing a trough for weld metal. Tank heads are first tack welded to the body (right) and then the entire seam is welded



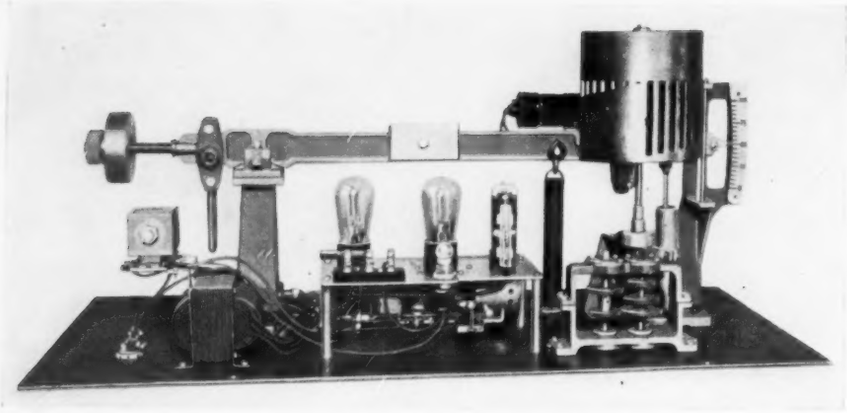


Fig. 1—Showing arrangement of scale beam with light-control instrument and chopper cylinder at the right. Vacuum tubes amplify impulses from the light cell and relay them to the integrator, which is not shown

Light Cell and Integrator Weigh Conveyor Belt Loads

ACCURATELY weighing the steady flow of material passing by on a conveyor belt; keeping careful count of the tons that have been handled; and finally, recording on a time chart the belt loadings throughout the twenty-four hours of the day—such is the latest task undertaken by a combination of electric eye and electric brain. This application of the light-sensitive cell and electrical integrator or counter, represents a notable advance over the means heretofore employed in accomplishing this work, mainly by way of simplicity, lower cost and more positive adjustment. While the general scheme of weighing a continuous flow of material remains the same, the means whereby passing weights are converted into corresponding electrical impulses for the operation of the integrator, has been radically changed with the introduction of the light sensitive cell.

Principles Reviewed

Better to understand the latest light-control application, it may be well to review the main principle involved. To obtain the weight of a continuous flow of material, it is necessary to combine the size of the stream with the speed at which it moves. The speed may be constant, but the size of the stream may range from 0 pounds per foot to the full capacity of the conveyor. Consequently, any variation of load must be noted instantaneously at the controller so that true integration of weight may be obtained.

At the point where the continuous stream of material is to be weighed, a short section of belt is installed, mounted in such manner that its varying weight is communicated to the weight checking equipment placed directly above. This arrangement is shown in Fig. 2.

With the varying weight of the load on the conveyor belt, the beam of the weight checking mechanism is actuated. The scale load at one end causes the fulcrumed beam to swing over the scale of the load indicator at the far or free end, shown in more detail in Fig. 1. This of course indicates the instantaneous weight, but there is still need for some device to keep tally of the continuous procession of varying weights. It is at this point that the light sensitive cell is applied.

Near the free end of the swinging beam is mounted a cross arm carrying a Burgess radiovisor bridge or simplified form of light-sensitive cell, and a light source lamp. These members are so mounted that one is outside while the other is inside a revolving light-chopper cylinder which is driven in step with the speed of the belt. The light-chopper cylinder derives its name from the fact that it carries 32 parallel vertical slots which serve to interrupt the passage of the beam of light between light source and bridge. However, the slots are of varying lengths. The first is equal in length to the distance traveled by the scale beam from 0 to full load. Each succeeding slot is shortened an equal amount at the bottom, so that a line drawn from the bottom of slot 1 around the cylinder to the bottom of slot 32 would form a true helix, touching the bottoms of all slots.

Impulses Are Interrupted

The bridge or cell is mounted in a housing provided with a window directly opposite the sensitive plate. The condensing lens of the light source is adjusted to concentrate an intense beam of light through the window and on to the light-sensitive plate. However, the wall of the rotating chopper cylinder comes between, allowing the light beam to pass only when a slot is in line. Each admission of light reaching the bridge sets up an electrical impulse,

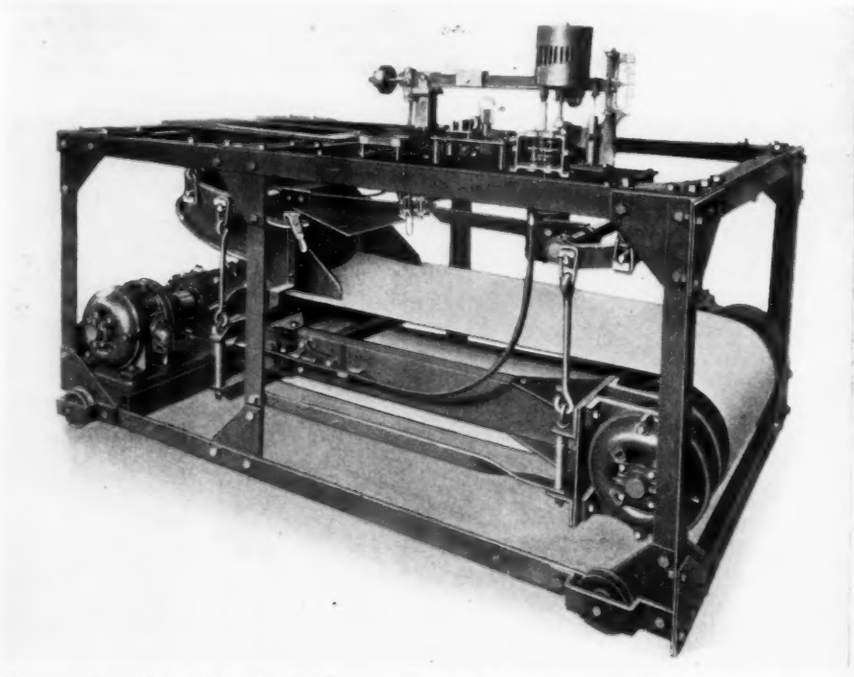


Fig. 2—Complete telepoise unit, except for integrator. Weight of the moving belt and its load is transmitted through a system of levers to the scale beam

which impulse in turn drives the mechanism of the integrator or electric brain that keeps tally, as well as the time chart recorder.

With no load on the belt the free end of the beam is down, with the focused point of light just below the bottom of slot 1 of the chopper cylinder. Hence no impulses result since no light reaches the bridge. However, as load is placed on the belt the beam swings upward proportionately, bringing the focused point of light higher and higher on the chopper cylinder, so that more and more slots admit light and cause a corresponding number of impulses to actuate the electrical integrator.

The number of impulses is always proportional to the load, from 0 to capacity at which the scale is calibrated. At full load there are 32 contacts per revolution of the chopper cylinder. With 350 contacts per minute and a belt speed of 350 feet per minute, an impulse is obtained for each foot of belt, which is representative of a certain amount of material passing over the scale.

Balanced by Test Weights

Balancing the scale is a simple operation. A test weight is provided, which represents exactly half load when hung on the beam. A switch serves to cut out the integrator and throw in a small lamp which flashes at each impulse. A change gear is provided, which slows up the revolutions of the chopper cylinder so that the flashes may be counted. With no load on the moving belt, there should be 16 flashes for each complete cycle if the machine is properly balanced. If out of balance, the scale is balanced with a balance ball as required, until 16 flashes are obtained per revolution. The test weight then is removed.

The bridge, light source and chopper cylinder serve to produce the necessary electrical impulses, which are amplified by means of a two-stage amplifier designed and built by the engineering staff of the Burgess Battery Co., New York. The amplifier output operates a vacuum contact relay capable of handling all the current required for the operation of one or more integrators or counters, which may be located at any distance from the scale. A rectifier converts stepped down alternating current into low-voltage direct current, for the operation of the integrator and scale chart, in accordance with the makes and breaks of the vacuum contact relay. The integrator is simply an electromagnetic counter with a number of units to represent the grand total of integrated weights.

The telepoise, as the ingenious continuous weighing and recording mechanism is termed by its designer, E. J. White of the staff of John Chatillon & Sons, New York, pioneer builders of scales, is finding many applications in mines, power plants, warehouses, factories and other establishments where bulky materials must be weighed while in motion. Earlier models made use of a mechanically actuated impulse-producing means of a more intricate and costly nature than the present light-control means.

Expanded Metal Sheets Find New Use in Stockroom Partitions

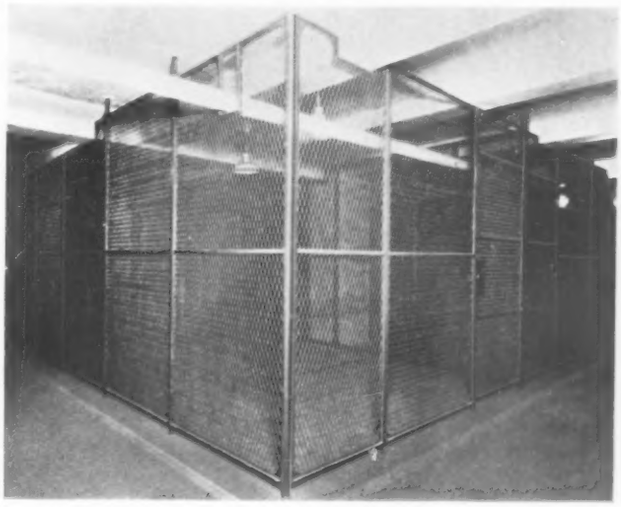
UNTIL recent years the use of expanded metal was not promoted actively, but at present new applications are being devised daily for the material. One of its earlier uses was for machine guards. Large tonnages also have been consumed for concrete reinforcing, while a comparatively recent adaptation is for stockroom partitions, such as shown in the accompanying illustration.

In the manufacture of expanded metal, staggered slits are cut in a steel sheet which then is pulled out, or expanded, to form a diamond-shaped mat. By the most up-to-date method the sheet is slit by knives located both above and below and is expanded in the same operation, the process increasing considerably the elastic limit of the sheet. After the sheet has been expanded the sharp edges of the segments are ground off to improve appearance and to permit safe handling.

Black sheets ordinarily are used, although copper-bearing material also is suitable. The expanded metal weighs from 0.20 to 3.23 pounds per square foot, depending upon the size and gage of the mesh. The diamond-shaped openings range from ½ to 6 inches in width, while the unit sheets come in standard sizes of 4 x 8 and 6 x 8 feet, with special lengths up to 16 feet available.

The expanded metal sheet has comparatively low cost and can be assembled easily by maintenance departments. Used in partitions, the mesh admits the maximum of heat, light and air. Being a single unit, it cannot ravel; and it has sufficient rigidity for use in operator platforms and for a light type of grating. The recent introduction of a quickly attached steel frame bar has simplified assembly of the expanded metal since by use of these frame bars a partition can be salvaged and made larger or smaller as desired, according to A. C. Griffith, supervisor expanded metal sales, United States Gypsum Co., Chicago.

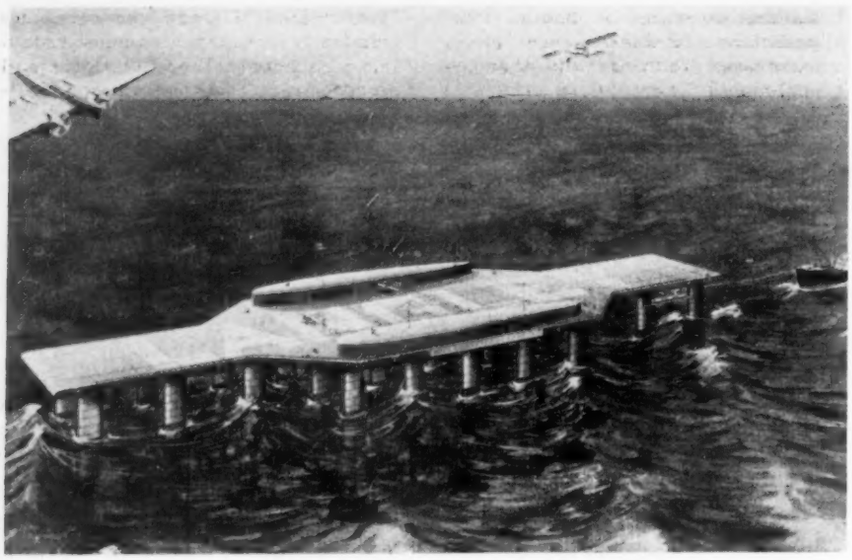
Other uses are in brake shoe reinforcing, air filters, waste baskets, guards for moving parts and radiators, automatic stokers, circuit breaker protectors, and porthole and hatch covers on ships.



EXPANDED metal partitions are comparatively low in cost, can be erected quickly and easily, and furnish little obstruction to heat, light or air

Welding Course Popular

At the close of 1931, three months after the start, a total of 61 students had completed the course in the design of welded steel structures, sponsored by the General Electric Co., Schenectady, N. Y. Of this total, 27 were representatives and engineers of customers of the company; the remainder of the group were company apprentices.



Artist's conception of seadrome in deep draft condition, anchored on ocean airway. Supply ship is shown at the extreme right

Seadrome Project Requires 17,000 Tons of Iron, Steel

BY A. H. ALLEN
Associate Editor, STEEL

SEADROMES or mid-ocean landing fields for aircraft have been the subject of popular fancy and speculation as well as serious investigation since as early as 1915. Although no attempts have been made to erect one of these structures for practical usage, it now appears that after 17 years of development work, the first seadrome will make its appearance shortly.

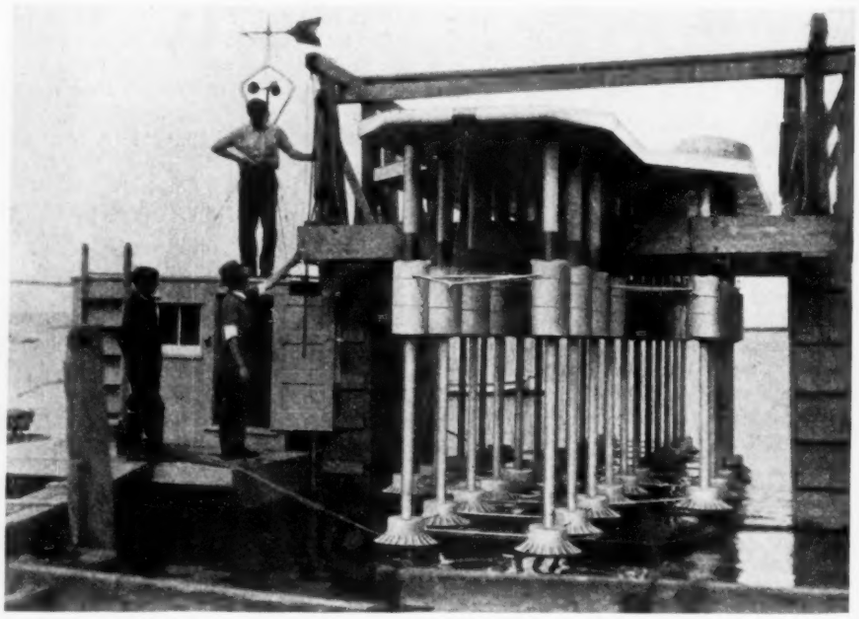
Work is being carried on under the direction of Edwin R. Armstrong, consulting mechanical engineer specializing in aircraft, and president of the Armstrong Seadrome Corp., Wilmington, Del., who has been investigating seadrome possibilities and has designed 20 different types in the past 15 years. The final design evolved recently by Mr. Armstrong is shown in accompanying illustrations. Plans and specifications for the structure are complete, bids on material have been received and construction work is awaiting completion of financial arrangements. Mr. Armstrong states that he hopes to have work under way by summer of this year.

Over 17,000 tons of structural iron and steel, in addition to several thousand tons of iron ore for ballast will be required for the first of these seadromes, to be located about 350 nautical miles from New York, on the New York-Bermuda steamship route, in 12,000 feet of water. If installation and operation prove successful, and exhaustive investigation by Mr. Armstrong seems to indicate that they will, plans call for the installation of seven additional seadromes at 500-mile intervals on a southerly route to Europe.

The seadrome is a 6-acre landing deck mounted on a floating openwork structure, with the deck 70 feet above the water line and buoyancy tanks averaging 40 feet below water line. The deck and substructure are supported by 32 tubular columns so arranged and of such a shape that passing waves will pass through the assembly without being broken up. Buoyancy tanks, below the columns supporting the deck truss and floor system, are located so as to be in the relatively undisturbed water under the waves. Further down the columns ballast tanks give the whole structure adequate stability, the principle being to locate the center of gravity below the center of buoyancy. These ballast tanks or chambers, containing iron ore, are 160 feet below the surface of the sea, and are extended in circular form, as shown in the illustrations, to act as damping disks to prevent oscillation. Displacement of the structure in service is 50,000 tons.

Special Anchorage Devised

A 1500-ton reinforced concrete anchor, resting on the bed of the ocean, is connected to an anchorage buoy by a triple anchorage cable of six sections. Each of the three cables ranges in diameter from 2¾ to 3¾ inches. The entire cable is 17,900 feet long with a weight of 417 tons, and provides a safety factor of well over 5. Two 3¼-inch 500-foot cables connect the anchorage buoy to the seadrome, which lies down wind from the buoy. The buoy,



Seadrome model, 1/32 scale, 35 feet long and weighing 2 tons. This model was towed out into Chesapeake bay and tested to determine its performance in rough weather

shown in one of the illustrations, comprises three buoyancy tanks inter-connected in the shape of a triangle. As an additional precaution, a test cable made up of one strand of main anchorage cable is pendant from the seadrome and can be raised periodically for inspection to determine condition, corrosion, etc. Design of the anchorage and cable systems was worked out by John A. Roebling's Sons Co., Trenton, N. J.

The seadrome steel deck, design of which was drawn up by the Belmont Iron Works, Philadelphia, is 1100 feet long, 340 feet wide in the central zone and 180 feet wide at the ends. It is proposed to cover the surface with the interlocking type of structural steel flooring described in STEEL, Nov. 9, page 34. The 32 buoyancy tanks are connected to the deck by means of streamlined iron columns, the whole forming a deep truss by means of tubular struts and steel cable ties. Buoyancy tanks are arranged symmetrically in four rows, the outer rows being composed of five tanks each, 34 feet in diameter, and the central rows of 11 tanks each, 27 feet in diameter. All tanks are 38 feet deep, with longitudinal spacing averaging 100 feet.

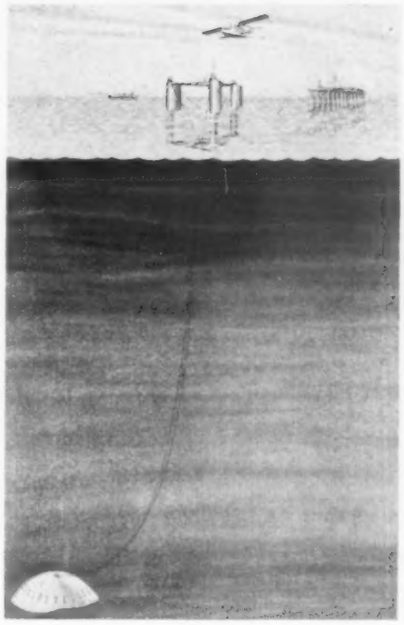
Below the buoyancy tanks the lower columns extend about 100 feet to support the ballast tanks which contain ore ballast sufficient in amount to bring the center of gravity of the structure as a whole about 10 feet below the center of buoyancy.

Telescoping Columns

The deep sea draft of the seadrome, on station duty, is 177 feet. Obviously, such a great draft precludes erection close to shore, so a special construction has been adopted to permit this operation in shallow water, with a draft of approximately 44 feet. Ballast tank columns are designed to telescope up inside the streamlined upper columns, connecting the buoyancy tanks with the deck; the ballast, ballast tanks and ballast tank columns under this condition being supported by the buoyancy of the ballast tanks.

Soft steel is the principal construction material, used with riveted joints, the single exception being the deck, where welding is to be employed. Special rivets are specified in all locations directly exposed to sea water, to minimize corrosion brought about by electrolytic action. The streamlined columns, connecting the deck with the buoyancy tanks, are made of iron, since investigation has shown that iron is highly resistant to salt water corrosion, as evidenced by the long life shown by numerous old iron sailing ships.

According to present plans worked out for assembly of the structure, fabrication of the deck trusses and the floor system will commence simultaneously with the construction



Anchorage system showing seadrome connected to anchorage buoy which in turn is connected by triple cable to the 1500-ton reinforced concrete anchor on the ocean floor

of the buoyancy units. Buoyancy tanks, together with connecting columns and struts, will be fabricated by the Sun Shipbuilding Co., Chester, Pa., and companies associated with it, producing among them four units every 30 days. Belmont Iron Works will construct the necessary deck system to go with one section of two tanks, every 15 days.

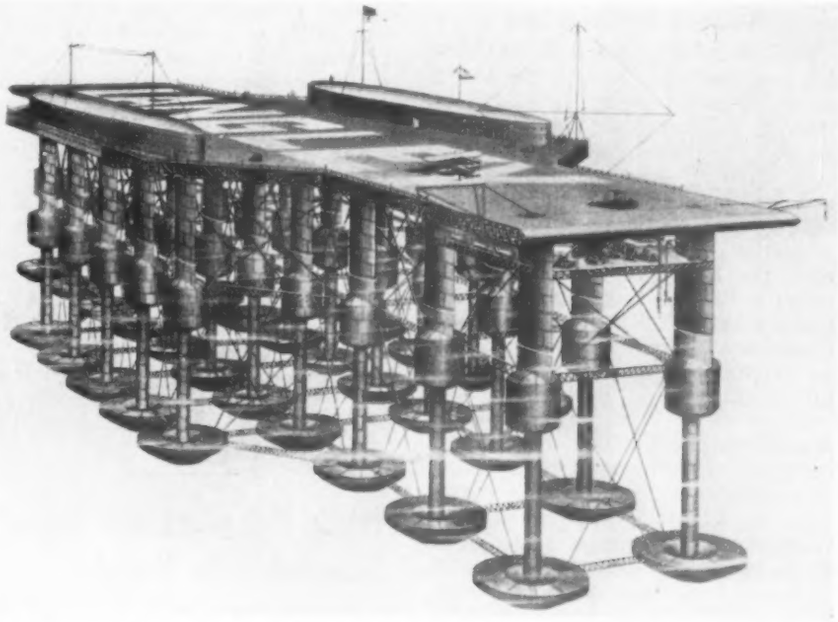
The first four tanks will be assembled in skeleton form under the Philadelphia Navy Yard crane to give an erection platform on which to locate the erection derricks necessary to complete the balance of the structure at the assembly point in Delaware bay, about 10 miles west of Cape May, N. J. The first unit will be towed to this site and anchored, while deck structural material and additional buoyancy units will be barged and towed to the erection site, completing assembly of the structure in shallow draft condition. About nine months time will be required for complete erection in shallow draft, while an additional three months will be required to tow the structure to its final location and anchor it there.

The seadrome will provide service hangars, repair shops, weather bureau, radio equipment and direction finders, beacon lights and modern hotel accommodations. A personnel of about 125 resident employes will be maintained with facilities for a floating population of from 300 to 500.

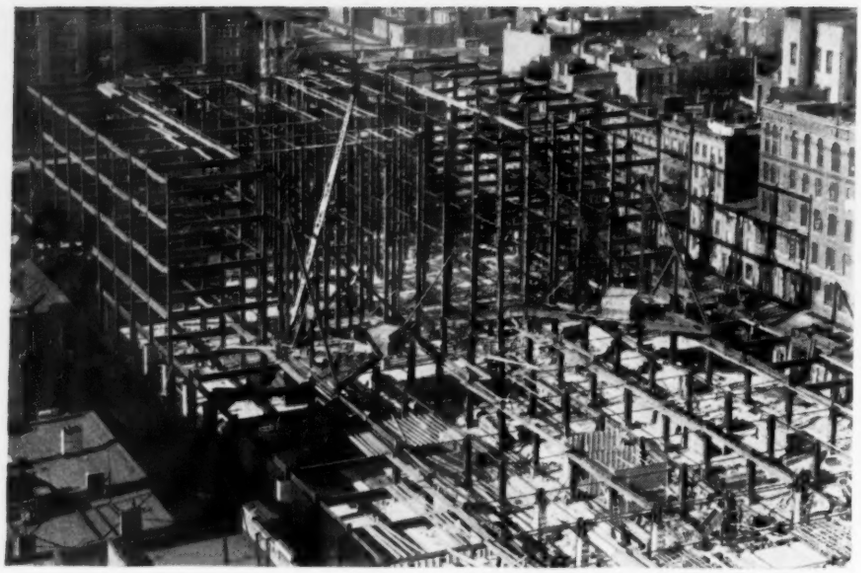
Expert Consultants

A number of organizations have co-operated with the Armstrong Seadrome Corp. in preparing details of design, construction and operation, including Henry J. Gielow, Inc., New York; Black & Bigelow, New York; John A. Roebling's Sons Co.; Belmont Iron Works; Sun Shipbuilding Corp.; General Electric Co., Schenectady, N. Y.; Lidgerwood Mfg. Co., New York; Baldt Anchor & Chain Corp., Chester, Pa.; the DuPont Co., Wilmington, Del.; Sperry Gyroscope Co., New York; bureau of standards and navy department, Washington; Sikorsky Aviation Corp., Bridgeport, Conn.; Merritt-Chapman & Scott Corp., New York; and the Marine Office of America, New York.

Estimated cost of the seadrome, as installed, is $4,000,000.



Out-of-water view of the seadrome in deep draft, showing boat and service deck at stern, hangar and hotel superstructures, with plane on landing deck



Close to 23,500 tons of structural steel for a new freight terminal in New York is being erected by two special traveling derricks. These derricks, shown in the center of the illustration, have 88-foot booms

Traveling Derricks Speed Erection of Structural Steel in New Terminal

SPEED in the erection of structural steel for the Port Authority Inland Freight terminal, New York, requiring 23,500 tons, is approaching record-breaking proportions because of an unusual traveling derrick set-up. While traveling derricks are used generally in large bridge, pier and low building construction, the system has never before been utilized in the erection of steel in a multi-floored structure on the same scale as the inland terminal.

Unusual Problems Met

Because of the large size of the building and the heavy loading for which the floors were designed, unusual problems in construction have been presented. For the ordinary multi-storied steel building, erection equipment is arranged for easy vertical mobility so that derricks can be jumped from floor to floor as construction advances. However, the length of the Inland Terminal is 800 feet, its width is 206 feet and its height 16 stories, and these dimensions make horizontal as well as vertical movement of equipment necessary.

Engineers of the Taylor-Fichter Steel Construction Co., New York, designed and erected two so-called "travelers" to meet this condition. Each traveler consists of a large triangular steel frame carrying a mast and a boom 88 feet long. The frame is mounted on three pairs of wheels which engage on steel rails, permitting longitudinal and transverse movement. Total weight of each traveler is 48 tons, and the lifting capacity of each is 25 tons. Each is operated by a 100-horsepower electric engine.

Under this arrangement it was possible to erect all steel from the subbasement to the second floor on one trip the length of the building and now from the second floor to the sixth floor on the return journey, a total of eight tiers from one set-up. Later, it will be necessary to raise the travelers to the sixth floor level, from where steel can be erected to the tenth floor.

Steel above the tenth floor occurs only at the east and west ends of the building and will be handled by the customary derricks. At this point the travelers will be dismantled and removed.

The structural steel was fabricated by the American Bridge Co. and by Feb. 10 had been set to the sixth floor level over most of the entire block bounded by Eighth and Ninth avenues, Fifteenth and Sixteenth streets, Manhattan. The Turner Construction Co. is the general contractor, and W. W. Roberts is superintendent.

Railroads will occupy a portion of the terminal in the late summer for the handling of less-than-carload freight.

Metal Congress and Show Scheduled for Buffalo

Buffalo has been selected for the fourteenth annual National Metal congress and exposition, the decision having been made Feb. 5 by the board of directors of the American Society for Steel Treating, the principal sponsoring organization. Oct. 3-7 were established as the dates. This marks the first time the congress and exposition have been held in Buffalo.

The exposition and afternoon technical sessions of the congress will be held in the 174th Regimental armory, a large building with 105,000 square feet of exhibit space free from pillars and with every exposition facility. The week of Oct. 3, two weeks later than the usual date, was selected at the request of exhibitors and members of various co-operating societies as being more convenient to the majority.

Co-operating with the American Society for Steel Treating in the 1932 congress are the American Society of Mechanical Engineers, Institute of Metals and Iron and Steel divisions of the American Institute of Mining and Metallurgical Engineers, American Welding society and Wire association.

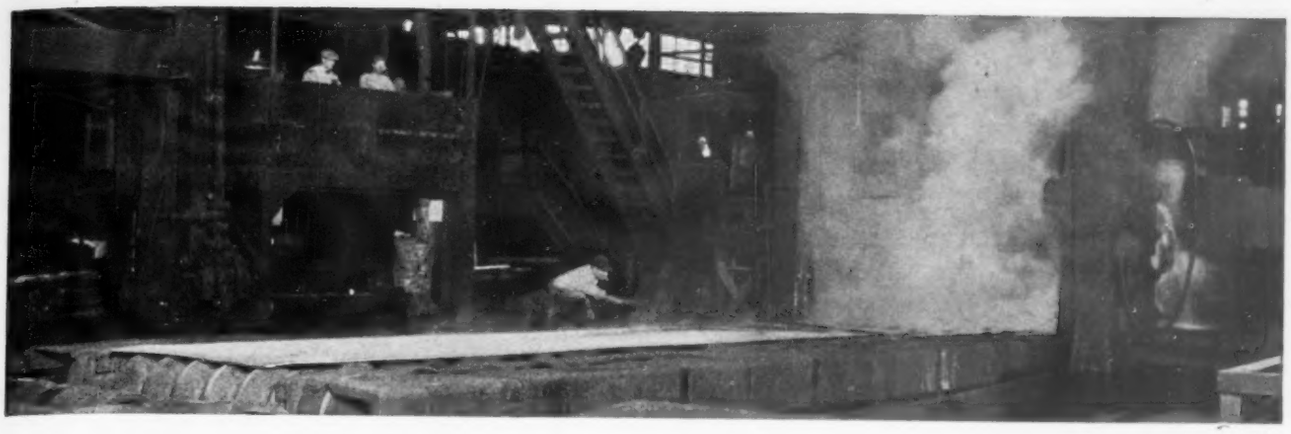
Chicago Foundrymen Hear Papers on Casting Design

Inherent qualities of steel castings that add to their reliability for parts in which bars, shapes and forgings find service were cited by W. G. Hanawalt, assistant superintendent, George H. Smith Steel Casting Co., Milwaukee, in a paper presented at a joint meeting of the Western Society of Engineers, Chicago section of the American Society of Mechanical Engineers, Chicago Foundrymen's club, Chicago group of the Gray Iron institute and the Chicago Foundrymen's association, held the evening of Feb. 8 at the Engineering building auditorium, Chicago.

Mr. Hanawalt's remarks were read by W. J. Donnelly, secretary-treasurer of the Smith company, and pointed out that steel castings in the past few years have taken on a vastly improved appearance, showing freedom from cracks with a higher degree of machinability. Minimum thickness of sections occupied much of the discussion which followed, while a number of questions pertaining to design and characteristics for parts subject to surface wear were answered.

The meeting was one of a series being sponsored by the American Foundrymen's association and other foundry groups. Characteristics and physical properties of malleable castings were outlined in a paper by J. H. Lansing, works manager of the Danville malleable iron division of Allith Prouty Co., Danville, Ill.

Alabama Pipe Co., Anniston, Ala., is making light weight culvert pipe under the brand name of Atlas pipe.



PROGRESS IN STEELMAKING

SEVERAL sheet mills in the Pittsburgh district recently have installed automatic catchers. These consist primarily of small tilting tables with motor-driven conveyors and tilting motions, located on either side of the conventional type sheet mill. The pack, in advancing through the rolls, operates a flag switch which causes the conveyors to reverse and the tables to tilt, thus passing the pack back over the top roll. On the return the pack again operates the flag switch, causing the conveyors to reverse and the tables to drop and sending the pack again into the rolls. The conveyors reverse from full speed to full speed in half a second, and the mill makes from 9 to 12 passes per minute on the pack in the process of reduction.

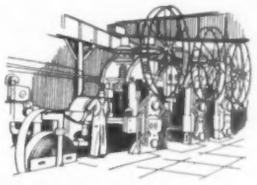
♦ ♦ ♦

Although annealing steel in artificial atmospheres still is in its early stages of development, clean annealed surfaces are being secured and the method gives promise of reducing or eliminating certain pickling, washing and drying operations. Recent tests on production lots of black plate for tinning demonstrated the possibility of passing the black plate directly from the annealing furnace to the tin pot.

PHYSICAL properties of normally dirty open-hearth steels do not vary to any marked degree with the total amount of inclusions present, according to an investigation now in progress at the bureau of mines experiment station, Pittsburgh. The size of the inclusion appears to be of more importance than the total number.

♦ ♦ ♦

Power savings of 40 per cent have been effected on a hot strip mill in the Chicago district by the use of wooden or lignum-vitate bearings.



ALL housings of a 16 and 26-inch 4-high tandem cold strip mill recently placed in initial operation by an Ohio producer are made of cast steel instead of cast iron to provide added rigidity for maintaining roll alignment.

♦ ♦ ♦

A new type steel construction for bridge flooring recently has been developed by a Pittsburgh steelmaker. Bars inserted through openings punched or slotted in tees, form an interlaced grating which is filled with concrete to provide a hard, nonskid surface. The floor grating weighs 23½ pounds per square foot and, with concrete, about 56 pounds per square foot.

♦ ♦ ♦

Experiments made on a 70-ton open-hearth furnace in Germany disclose that the depth of the bath has no influence on the speed of the refining action because of the high velocity with which the equalization of the carbon content occurs within the bath.

♦ ♦ ♦

At a steelworks in the Pittsburgh district an ingot chariot has been replaced by an electric locomotive which is driven by two 150-horsepower, force-ventilated motors and is capable of accelerating at a rate of 2½ miles an hour per second. The unit transfers heated ingots from the soaking pits to the blooming mill, a distance of 325 feet, and makes 75 round trips an hour.

♦ ♦ ♦

The use of basic open-hearth slag in blast furnace burdens, amounting in some instances to 60 per cent of the total slag produced at the open-hearth shop, has resulted in lower pig iron costs through the reduction in the quantity of flux and fuel charged.

♦ ♦ ♦

Tests show that the power consumption of continuous sheet mills, based on an output of 150 tons an hour, and including idle friction of mills and power requirements of various mill auxiliaries, amounts to 45.6 kilowatt hours per ton of rolled steel from the front of the mill to the coil storage.

♦ ♦ ♦

Economy in acid consumption has been effected at a plant in New York where large quantities of wire rods are descaled. Instead of increasing the acidity of the pickling bath when it becomes contaminated with iron sulphate, the normal temperature of 180 degrees Fahr. is increased to 200 degrees to consume as much of the unspent acid as possible before discarding the solution.

LEADS to all motors at a sheet mill in Ohio are provided with a safety switch which, when in an open position, makes it impossible for others to apply the current when repairs or adjustments are being made to the machines driven by such motors.

New Books Worth Reading

SCIENCE ◆ ECONOMICS ◆ BUSINESS

This Will Help Compute British Income Tax

Tolley's Complete Income Tax Chart, 16th Edition, 1931-32, containing 19 folded charts, 8¾ x 5¼ inches; published in London by Waterlow & Sons Ltd., London Wall, London, E. C. 2, and obtainable from the Penton Publishing Co. Ltd., Caxton House, London. Land value tax supplement extra if purchased with the chart.

Firms having controlled interests in Great Britain will find this guide useful in computing the income tax to be paid by British companies. This year's chart has been brought up-to-date and incorporates statutory alterations, concessions, changes in practice and cases in the courts affecting income tax to July, 1931. The chart includes the alterations brought about by the last finance act, including the new section relating to tax deduction from company dividends, and the important addition of the land value tax, which is dealt with in a special supplement and which will be enforced next year.

All the information is presented in the form of tables and charts, and at the beginning of the folder is a list of the various sections and a useful index, which facilitates reference to the particular section in which the reader is interested.

◆

Training in Use of Engineering Data

Use of Handbook Tables and Formulas, by John M. Amiss and Franklin D. Jones; flexible cloth, 210 pages, 4½ x 7 inches; published by Industrial Press, New York; supplied by STEEL, Cleveland, for $1, plus 15 cents for postage, and in Europe by Penton Publishing Co. Ltd., Caxton House, London.

The practical value of a handbook is increased by knowledge of its contents and by application of its tables, formulas and general data whenever they will save time or insure accuracy. To increase the knowledge of these factors is the purpose of this book, which is issued by the publishers of Machinery's Handbook.

It throws light on many essential time-saving tables, rules and general information in this handbook, which the ordinary user does not discover. It shows by examples, solutions and test questions typical applications of handbook matter in drafting rooms and machine shops. It provides test questions that enable the handbook user, through practice, to obtain the desired information quickly.

Helpful hints are provided for even the experienced engineer and shop executives while for younger and less experienced men it provides a condensed course in mechanics, machine shop practice and engineering and a guide to everyday use of technical handbooks.

◆

Handbook on Etching Aids Work of Metallographers

Metallographers' Handbook of Etching, by Torkel Berglund; cloth, 183 pages, 5½ x 8½ inches; published by Isaac Pitman & Sons, New York; supplied by STEEL, Cleveland, for $3.75, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

Movement toward compilation of this work was started by the Society of Swedish Metallographers in 1926 and collection of data was started the next year. While the first plan was to cover only iron and steel it was found advisable to include such nonferrous metals as are met in an industrial laboratory. Search for data along this new line took time and delayed the appearance of the book somewhat.

The book first takes up general considerations, preparation of specimens, chemistry of etching, types, technique and heat tinting. Succeeding chapters cover macro-etching and micro-etching of iron and steel and etching of nonferrous metals. A bibliography of original sources and an index render available the subject matter.

◆

Structural Steel Welding Information Assembled

Report of Structural Steel Welding Committee of American Bureau of Welding; paper, 208 pages, 6 x 9 inches; published by the American Welding society; supplied by STEEL, Cleveland, for $1, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

The committee was appointed in 1926 by the American Bureau of Welding to obtain reliable information upon which to base safe unit working stresses in designing welded structures.

After reviewing all the test data in the literature available the committee decided a comprehensive series of tests should be made before final recommendations were promulgated. A full report of the investigation makes up this report. To make it representative of commercial practice a large number of shops were asked to participate and full instructions were supplied, to insure maximum uniformity of procedure.

Two final conclusions were reached: Permissible unit stresses per square inch of weld throat; and that in commercial practice a welded joint may be expected to have strength within 12 per cent of a general average for that type.

Several desirable fields for further research are recommended.

◆

Using English as Tool Of Precision His Theme

Technical Writing, by T. A. Rickard; cloth, 337 pages, 5½ x 8 inches; published by John Wiley & Sons Inc., New York; supplied by STEEL, Cleveland, for $2, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

After experience as editor of various engineering publications, and in that capacity handling the writings of engineers, the author comes to the conclusion that engineers, accustomed to handling instruments and methods of the greatest precision, do not regard the English language as a precision instrument.

His conclusion is buttressed by copious extracts from matter that has passed under his hand as editor, which is used to illustrate incorrect uses of words and ideas.

This is the third edition, brought about by desire of the American Institute of Mining and Metallurgical Engineers to have its younger members study the text, which caused resetting of the type by the publishers, allowing the author to make various changes and bring it up to date in minor particulars. The work originated from a series of five lectures before the engineering classes of the University of California in 1916 and in the three editions has occupied a place of authority in the proper use of English in engineering writing.

MORGAN ENGINEERING MEANS MILL EFFICIENCY

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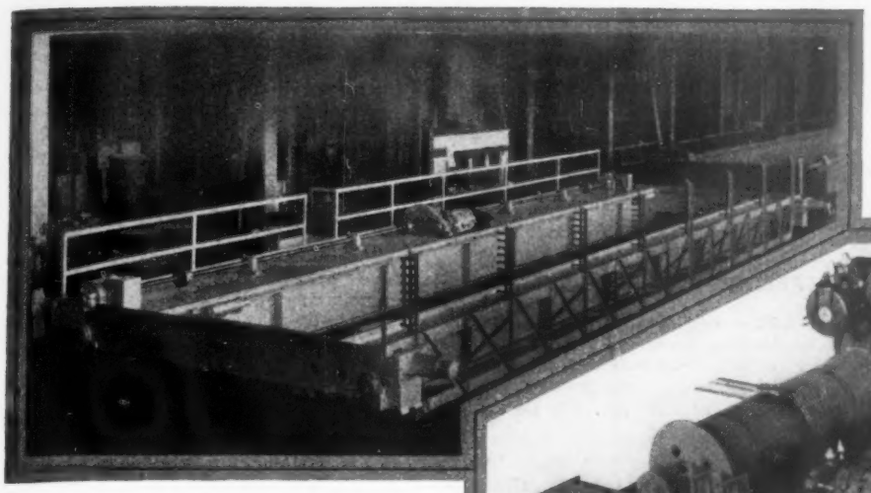

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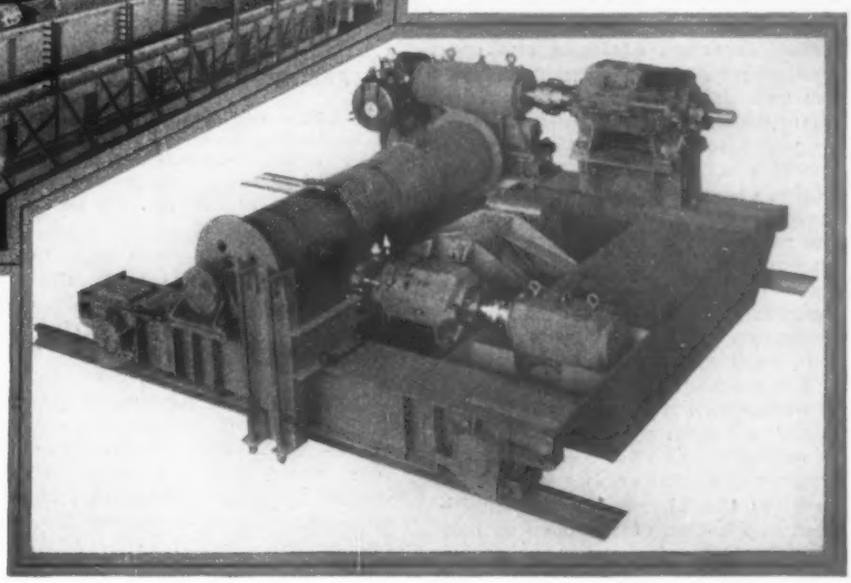

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Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

Furnace Atmospheres

Artificial furnace atmosphere created from ammonia, by John E. Haig, in Heat Treating and Forging, January, 1932, p. 48, 3 pp., 2 illusts.

This article, the first of two installments, describes a simple and economical method of generating hydrogen and nitrogen for use as furnace atmospheres. Hydrogen is available by purchase of the gas in pressure tanks; electrolysis of water; dissociation of hydrocarbon gases; decomposition of steam in the presence of iron; and dissociation of anhydrous ammonia. The latter method is economical and can be arranged to produce gases of any hydrogen concentration up to 75 per cent, the balance being nitrogen.

The mechanism of the dissociation of ammonia is discussed, and an ammonia dissociator and vaporizer is described in detail. Successful design of a vaporizer and dissociator requires the knowledge and intelligent application of the laws of heat flow, heat transfer, and the distribution of heating elements. The reaction of dissociation is an endothermic one and the thermal transfer in the vaporizer an application of recuperation. Design of such apparatus is a problem for the electric furnace engineer.

—STEEL, 2-15-32

Hoisting Chains

Use and care of hoisting chains, by Stewart L. Owen Jr., Safe Practices Pamphlet No. 98, published by the National Safety council, 8 pp., 8 illusts., 8 tables.

Hoisting chains are used in nearly all industries. They are subject to deterioration due to wear as well as embrittlement of the material because of strains, shocks or abuses. Unless the same attention is given to the selection, care and use of these chains as is given to other material handling equipment, injuries to persons and damage to property may result. The making of reliable and satisfactory chains requires skill and the use of suitable manufacturing and testing equipment. It is, therefore, important that such chains be purchased from reliable manufacturers or through their jobbers. It is also important that the purchase order or requisition include specific reference to the purpose for which the chain is to be used, together with the size and quality of chain desired. If the purchaser is not familiar with chain specifications he should consult the manufacturer.

—STEEL, 2-15-32

Threadlocking Devices

Relation of torque to tension for threadlocking devices, by H. L. Whittemore, G. W. Nusbaum and E. O. Seaquist, in bureau of standards research paper No. 386, 72 pp., 79 illusts, 7 tables.

This investigation was made to determine, under static loads, the torsional resistance to unscrewing of nuts, with and without locking devices, and the relationships these torques bear to the stresses in the bolt. The torque required to produce a given stress in the bolt was also determined for each device. Twenty-four manufacturers of threadlocking devices accepted the invitation to submit samples of their devices for test, and agreed to publication of the results.

A total of 41 such devices was tested, including such products as standard nuts, jam nuts and slotted nuts with cotter pins. Only about 25 per cent of these devices showed any appreciable difference in the static torque-tension relation from that of the American national coarse-thread standard nut.

—STEEL, 2-15-32

Gas Carburizing

Continuous carburizing by gas, by R. J. Cowan, in Metal Progress, February, 1932, p. 44, 5 pp., 6 illusts.

An industrial application of the continuous gas carburizing furnace is described, as operated by a large automotive interest. Work is loaded on trays or alloy grids and pushed slowly through the muffle of the gas-fired carburizing furnace, with "air locks" at each end. Carburizing gas enters with the cool work and both progress through zones of rising temperature. Gas mixture is controlled by automatic analysis of exhaust at discharge end of the furnace.

The first zone in the furnace in the preheat zone where temperature is below 1450 degrees Fahr. and the carburizing gas begins to break down into its constituents, hydrogen and carbon. The work here becomes covered with a deposit of carbon and as it moves on into the high-temperature or carburization zone the carbon dioxide of the flue gas, which is mixed with the carburizing medium, becomes active and reacts with the carbon, forming carbon monoxide, an active carburizing gas.

The work then enters the third or diffusion zone, held at the same temperature as the central zone, about 1650 degrees Fahr. In this zone an adjustment between gases present produces an inert atmosphere, preventing decarburization of the steel. By holding the metal in such an atmosphere, there is brought about a progressive diffusion of carbide from the case inward to the core, so necessary for a satisfactory adherent case.

—STEEL, 2-15-32

Rail Steels

Resistance to impact of rail steels at elevated temperatures, by G. Willard Quick, a paper to be presented at the New York meeting of the American Institute of Mining and Metallurgical Engineers, Feb. 15-18, 10 pp., 5 illusts., 1 table.

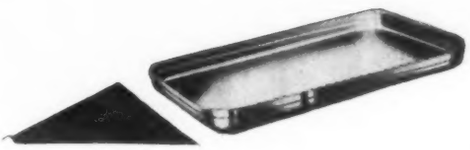
In line with a suggestion that impact tests at elevated temperatures on rail steels would be both quicker and simpler to perform than tensile tests, Charpy impact tests were made on specimens of rail steels, the tensile properties of which had been determined previously. Results of these tests showed that at temperatures of 500 and 600 degrees Cent. the energy absorbed was lower than at either 400 or 700 degrees Cent. This range of reduced ductility corresponds closely to the range of secondary brittleness shown by low ductility tensile tests.

Impact tests on specimens taken transversely from the rails also showed the phenomenon markedly but the energy absorbed was lower throughout the temperature range of tests. A reduction in the energy absorbed at 500 and 600 degrees Cent. was shown by impact tests on heat treated rails and a comparison normal rail. The impact tests did not discriminate as closely between the heat treatments as well as previously reported tensile tests on the rails had done.

—STEEL, 2-15-32

Stainless Steel

This stainless steel sink bottom makes it possible to attach body with seam about an inch above bottom surface so that dirt cannot accumulate in seam. This stainless steel used plus the design add to the cleanliness and sales appeal.



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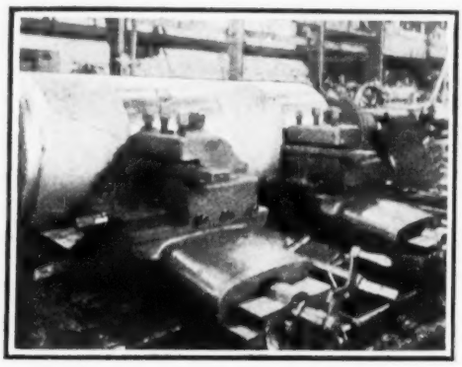
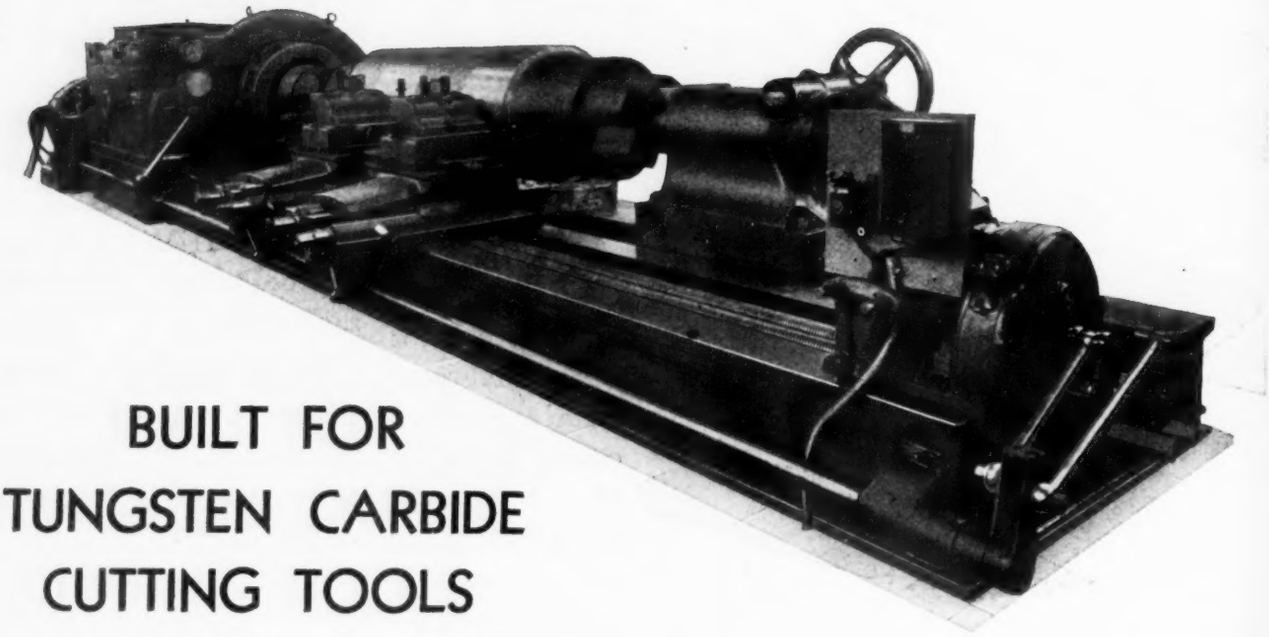


ENLARGED VIEW OF TOOL SUPPORTS



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New Equipment

PRODUCTION FABRICATION TREATMENT FINISHING

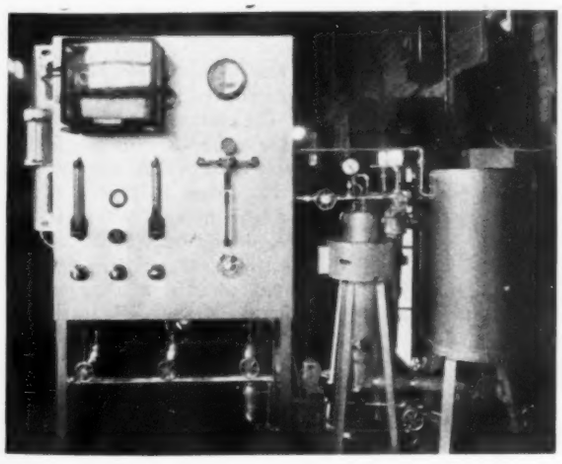
Effects Dissociation of Liquid Ammonia

Westinghouse Electric & Mfg. Co., Mansfield, O., has developed equipment for dissociating liquid anhydrous ammonia. The dissociator is available in three standard sizes, the capacities of which are 50, 250, and 600 cubic feet per hour, and is simple to operate, being practically automatic.

For many years metallurgical and chemical authorities have recognized the advantages of dissociated ammonia gases, which are by volume 75 per cent hydrogen and 25 per cent nitrogen. However, the universal use of this gas has been retarded by the lack of proper equipment for dissociating these gases in a pure state free from excessive quantities of raw ammonia and moisture.

The dissociator is so designed that when it is operated at rated capacity, the dissociation is about 99.5 per cent. Each pound of liquid ammonia yields 45 cubic feet of dissociated gas. Liquid anhydrous ammonia of a high quality, as manufactured and sold by National Ammonia Co., can be obtained in tank car lots at approximately $0.06 per pound, or in 100-pound cylinders at approximately $0.16 per pound. Based on the cost of operating the dissociator (with power rate of $0.01 per killowatt hour) the cost of dissociated gas is approximately $3.75 per thousand cubic feet. If the liquid ammonia is purchased in tank car lots at a cost of $0.06 per pound, the cost of dissociated gas would then be approximately $1.60 per thousand cubic feet.

The Westinghouse company has made several successful installations of ammonia dissociating equipment, one of which is shown in the accompanying illustration.

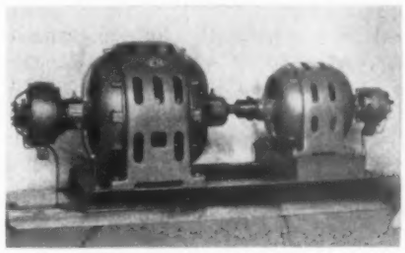


AN INSTALLATION of ammonia dissociating equipment developed by Westinghouse Electric & Mfg. Co. The dissociator is simple to operate, being virtually automatic. It is available in three standard sizes

◆

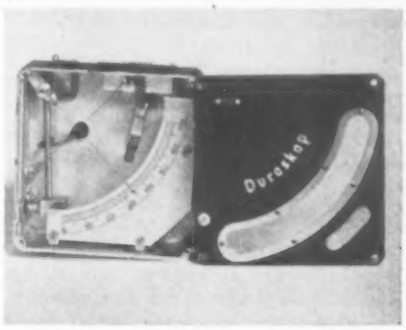
Frequency Changers Have Wide Range

Electric Machinery Mfg. Co., Minneapolis, is offering a line of synchronous motor driven frequency changers to provide means of obtaining alternating current at frequencies either above or below those of the usual 60 cycle source. Typical examples of equipment requiring special frequencies are vibrators, vibrator conveyors, special woodworking machines, welding machines and induction furnaces.



Frequency changer introduced by Electric Machinery Mfg. Co.

The set illustrated herewith, furnishes power for 13 vibrating conveyors. Motor is rated 50 horsepower to operate on 60 cycle current at unity power factor and the alternator is rated 125 kilowatt to deliver 30-cycle current. Power factor of the load on the alternator is low and the latter is designed to carry 25 kilowatt at 20 per cent lagging power factor. Speed which gives lowest first cost with this combination of frequencies is 900 revolutions per minute and the set was built accordingly, the motor having eight poles and the alternator four poles. In order that the generator excitation may be varied without changing the motor excitation each machine is furnished with its own exciter which is direct connected to the shaft.



Hardness tester placed on the market by R. Y. Ferner Co.

◆

Hardness Tester Employs a Falling Pendulum

R. Y. Ferner Co., 1129 Investment building, Washington, has placed on the market a new type of hardness tester which employs the principle of the falling pendulum. The instrument is portable and tests may be made rapidly inasmuch as the entire procedure consists only of holding it against the piece to be tested and pressing a button on the back of the case. This releases the pendulum to allow it to fall and strike through a hole in the edge of the case against the workpiece. In rebounding according to the hardness of the piece, the pendulum carries with it a light pointer which remains at the highest point on the scale to which the pendulum rises.

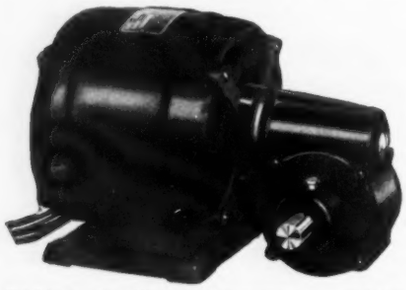
Crossed V-grooves in the edge of the instrument permit setting it properly against cylindrical pieces in either a horizontal or vertical position. The instrument is particularly useful for checking case hardened rollers. Adjustment is made easier by a built-in level in the top of the case. One valuable use of the tester is the checking of incoming or out-

going raw materials or of pieces undergoing heat treatment. It also is useful in stockrooms in selecting the best piece of steel for a given requirement. Thin material of less than 0.002-inch thick, has been successfully tested by the instrument, according to the manufacturer.

◆

Built-in Speed Reducer Is Feature of Motor

Bodine Electric Co., 2264 West Ohio street, Chicago, recently added fractional horsepower motors with built-in worm gear speed reducers to its line. These motors are embodied in the new type N-5 frame, which is of three-piece construction. Ventillating



Bodine fractional horsepower motor with speed reducer

ducts and fan have been enlarged and ratings increased.

Gear reductions of the motor are available in 10:1, 20:1 and 40:1 ratios, which afford slow shaft speeds of 28, 43, 56, 86, 112 and 172 revolutions per minute at standard motor speeds of 1125 and 1725. The speed reducer consists of a separable nitralloy steel worm and oversize bakelite gear, mounted in a grease-tight housing forming an integral part of the end shield of the motor.

These motors are rated from 1/20 to ⅛ horsepower and are available in alternating and direct current models. One of the motors is shown in the adjacent column.

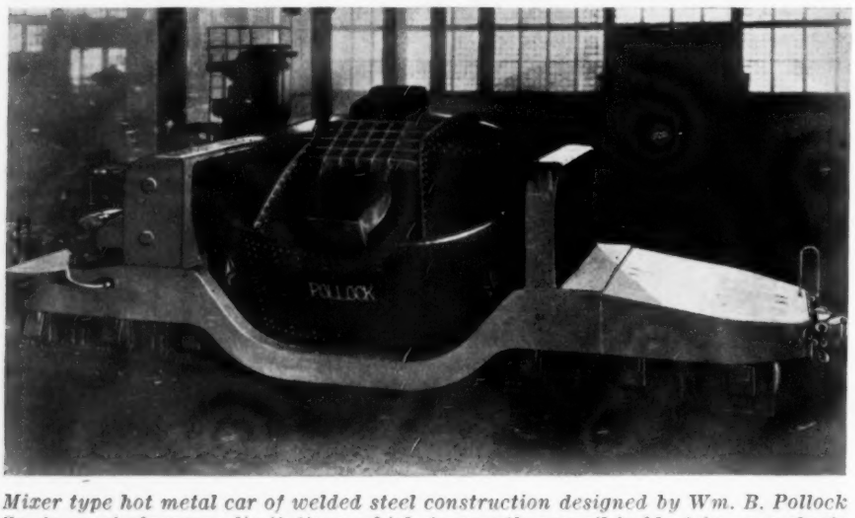
◆

Welded Hot Metal Cars Meet New Requirements

William B. Pollock Co., Youngstown, O., recently developed a mixer type hot metal car of welded rolled steel construction, which are from 24 to 30 inches lower than equipment heretofore available. This unit, shown in the accompanying illustration, was conceived to meet the demand for cars dimensioned to suit clearance limitations such as frequently prevail in blast furnace plants originally adapted to handle their iron through 35 to 50-ton ladle cars.

The car features a ladle whose cross section resembles that of the modern stationary mixer with its radial bottom section, straight sides, and curved top, the ends continuing this typical assembly, likewise in curved form. The result is a container which may readily be lined with standard brick shapes, all being keyed in position to insure self-support in any position of the ladle.

Body of the car is entirely independent of the ladle, transmitting all stresses due to load operation, from one end to the other, through side frames of patented girder construction, built integral with the car ends. The first of two cars of 125-ton capacity was placed in operation at the plant of Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., last year, where it since has handled up to 900 tons of iron daily, taken from two furnaces in 12 casts at two hour intervals, for discharge over a pig machine.



Mixer type hot metal car of welded steel construction designed by Wm. B. Pollock Co. to meet clearance limitations which frequently prevail in blast furnace plants

Cleco air-operated valve grinder is automatic and fast

◆

Introduces Air-Operated Valve Grinder

Cleveland Pneumatic Tool Co., 3734 East Seventy-eighth street, Cleveland, has designed an air-operated valve grinder, shown in the accompanying illustration. Among the advantages claimed for this new unit are light weight, size and shape which make for easy and convenient handling, speed which, it is claimed, reduces the time of hand grinding by 75 per cent, and the absence of vibration.

Oscillating movements of the unit provide alternate one-eighth turns on the face of the valve which eliminate possibility of grooves and assure equal grinding of the entire circumference.

The grinder operates automatically when pressure is applied by the operator, and its speed is increased or diminished accordingly. When lifted off the valve it automatically stops. The only requirements of the unit is the attachment of a ⅜-inch hose running to any air line. The grinder weighs 1½ pounds, is 8 inches in length with an outside diameter of 2 inches, and consumes only 6 cubic feet of air per minute, operating at a speed up to 3000 oscillations a minute.

Steel Encouraged by Ford Plans

Operating Rate Drops to 27 Per Cent with Further Recession Indicated This Week—Rails Slow—Pipe More Active—Efforts To Stabilize Sheets

HENRY FORD'S commitment to the manufacture of an eight as well as a four-cylinder car, inferentially beginning in March, is helping to stem bearish sentiment in steel generated by the continued dearth of railroad, automobile and structural business, but is too late to arrest a decline in production.

After wavering two weeks at 28½ per cent, steelmaking operations eased to 27 per cent last week. Mill schedules for the current week indicate a further drop to 26 per cent, a surrender of all improvement since the second week of January. A slight gain at Pittsburgh this week is contrary to the general trend.

In December, Ford took quotations on a substantial tonnage of finished steel, but weakness which has developed since—ascribed in part to the lack of Ford business—necessitates new tenders. This inquiry by Ford, expected shortly, may impose a severe strain on the current effort to stabilize steel prices.

It will be March, at the earliest, before steel again moves to Ford in volume, but with the Ford competition known other low-price car manufacturers can more accurately gage their markets and steel requirements. The Ford announcement, while not accompanied by actual orders, has encouraged all material suppliers.

Railroad demands are being shaped up, but extremely slowly. New York takes bids Feb. 19 on 5360 tons of rails. Western Maryland has distributed 2000 tons. The Colorado and Tennessee companies doubtless will share the 20,000 tons for the Southern Pacific. Repairs to 100 hoppers are sought by the Belt Railway of Chicago.

Structural shape awards in the week, 12,700 tons, are nearly equal to the tonnage in the preceding week. In Chicago and western cities 15,000 to 20,000 tons are represented in proposed new work; bids for 15,000 tons for the Detroit postoffice will be taken Feb. 15. For a dam at Rock Island, Ill., 5000 tons of reinforcing bars have been awarded Illinois Steel Co.

Activity in steel pipe is slightly more pronounced. Pasadena, Calif., will buy 9000 tons, San Diego, Calif., 4000 to 5000 tons, Minneapolis 2500 tons, and the Anderson-Pritchard Oil Corp., Oklahoma City, Okla., 5000 to 6000 tons.

After several weeks of revived pig iron demand sales have tapered sharply, though shipments continue well ahead of the January rate. Lake Superior iron ore producers are hopeful of delaying the opening of the market and a test of prices, believing a stronger situation will develop in April or May. Scrap is weaker, with a further reduction of 25 cents a ton in heavy melting steel at Chicago.

More scrap is being purchased for Japanese account; otherwise the Sino-Japanese disturbance is without effect upon the steel markets. Imports of foreign material, however, are more numerous and inimical to prices in the East. A cargo of 3000 tons of Dutch iron landed at Bridgeport, Conn., supplements the recent arrival of 5000 tons at Providence, R. I. Welsh tin plate is offered at $3, or $1.75 below the domestic price. Foreign concrete bars are moving into Boston.

More remunerative price levels are being sought through the medium of stabilization rather than the imposition of actual advances. On some grades of sheets, mills are attempting to eliminate irregularities and establish minimums generally $3 a ton above recent extreme concessions. This policy is expected to apply throughout the entire price structure.

Due to reductions in pig iron, STEEL's iron and steel composite is down 3 cents to $29.57; the finished steel composite is unchanged at $46.62, while the steelworks scrap composite is off 4 cents to $7.85.

Composite Market Averages

	Feb. 13	Feb. 6	One Month Ago (Jan., 1932)	Three Months Ago (Nov., 1931)	One Year Ago (Feb., 1931)	Ten Years Ago (Feb., 1922)
Iron and Steel Composite	$29.57	$29.60	$29.98	$30.61	$31.65	$32.86
Finished Steel Composite	46.62	46.62	47.28	48.17	49.42	50.29
Steelworks Scrap Composite	7.85	7.89	8.03	8.22	10.39	11.16

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, pipe, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Feb. 13, 1932	Jan., 1932	Nov., 1931	Feb., 1931
PIG IRON				
Bessemer, del. Pittsburgh	$16.76	17.26	17.76	18.51
Basic, valley	15.00	15.00	15.00	16.75
Basic, eastern del., eastern Pa.	15.75	16.00	16.00	17.25
No. 2 foundry, del. Pittsburgh	16.76	17.26	17.76	18.01
No. 2 foundry, Chicago	16.50	16.50	17.00	17.50
*Southern No. 2, Birmingham	11.00	12.00	12.00	13.00
**No. 2X, Virginia furnace	18.00	18.00	18.00	18.25
**No. 2X, Eastern del. Phila.	15.76	15.76	16.01	18.26
Malleable, valley	15.50	16.00	16.50	17.25
Malleable, Chicago	16.50	16.50	17.00	17.50
Lake Superior, charcoal, del. Chi.	23.04	22.44	25.04	27.04
Gray forge, del. Pittsburgh	16.13	16.63	17.13	17.38
Ferromanganese, del. Pittsburgh	80.24	79.85½	89.79	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

COKE				
Connellsville furnace, ovens	2.25	2.25	2.35	2.50
Connellsville foundry, ovens	3.25	3.25	3.25	3.25
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngs.	26.00	26.00	29.00	30.00
Sheet bars, open-hearth, Pitts.	26.00	27.50	29.00	30.00
Billets, open-hearth, Pittsburgh	27.00	27.50	29.00	30.00
Wire rods, Pittsburgh	37.00	37.00	35.00	35.00

	Feb. 13, 1932	Jan., 1932	Nov., 1931	Feb., 1931
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.50	1.55	1.60	1.65
Steel bars, Chicago	1.60	1.70	1.70	1.70
Steel bars, Philadelphia	1.81	1.81	1.89	1.94
Iron bars, Chicago	1.70	1.60	1.65	1.75
Shapes, Pittsburgh	1.50	1.55	1.60	1.60
Shapes, Philadelphia	1.65	1.65	1.69½	1.81
Shapes, Chicago	1.60	1.70	1.70	1.70
Tank plates, Pittsburgh	1.50	1.55	1.60	1.65
Tank plates, Philadelphia	1.69½	1.69½	1.73½	1.80½
Tank plates, Chicago	1.60	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.75	1.75	1.85	1.90
†Sheets, No. 24, hot, ann., Pitts.	2.15	2.20	2.40	2.35
Sheets, No. 24, galvan., Pitts.	2.70	2.80	2.90	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	2.00	2.00	2.05
†Sheets, No. 24, hot, ann., Chi.	2.30	2.45	2.55	2.50
Sheets, No. 24 galvan., Chi.	2.85	2.95	3.05	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.90	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00

†Comparisons are with old classification No. 24 black sheets.

SCRAP				
Heavy melting steel, Pitts.	$10.25	10.25	10.25	12.75
Heavy melting steel, eastern Pa.	7.35	7.50	7.95	10.50
Heavy melting steel, Chicago	6.75	7.20	7.65	9.85
No. 1 wrought, eastern Pa.	9.00	9.35	9.50	11.00
No. 1 wrought, Chicago	7.25	7.25	8.00	9.25
Rails for rolling, Chicago	10.00	10.25	10.00	12.10

Sheets

Mills Raising Prices in Effort at Stabilization—Specifications Are Moderately Improved

SHEET PRICES, PAGE 41

Pittsburgh—Sheet producers are preparing to halt an extended period of declining prices which over the past several months has reduced quotations as much as $6 a ton, by announcement of higher prices. Some interests during the past week withdrew former quotations on galvanized and hot-rolled annealed sheets and are now naming 2.85c and 2.30c, respectively. Specifications have shown a moderate improvement despite the lack of heavier orders from the automotive industry. Shipments and operations are fairly well maintained.

Boston—Connecticut has awarded approximately 175 tons of sheets for 1932 automobile markers to Apollo Steel Co., Apollo, Pa., on a bid of 2.83c, Cheshire, Conn.

New York—An increase in minimum prices on several grades of sheets is being asked by some sellers here, with the probability that others will take similar action. The new minimum on No. 10 hot rolled is 1.60c, Pittsburgh; on No. 10 blue annealed, 1.75c, an increase of $1 a ton in each instance; and on No. 24 hot rolled annealed, 2.30c, an increase of approximately $3 a ton. Galvanized sheets at the newly announced minimum of 2.85c, Pittsburgh, are up $2 to $3 a ton.

Philadelphia—Sheet prices appear stronger, especially on four grades, with indications that efforts will be made shortly to stiffen others, including cold-rolled. Protections are relatively few.

Buffalo—Efforts to have 1800 tons of sheets for 1933 automobile license plates in New York awarded to the Seneca Iron & Steel Co., Buffalo, which submitted the second lowest bid among 12, have failed. The state has just given the order to the low bidder, the Apollo Steel Co., Apollo, Pa.

Youngstown, O. — Sensing a strengthening of the sheet market in immediate prospect, buyers manifest more interest in their requirements. These are miscellaneous in character, outside the automotive industry, which is showing a tendency to slow down. The strengthening of the sheet bar market here and in Cleveland is expected to be reflected in further firmness in sheets.

Cleveland—In an effort to stabilize sheet prices some mills are beginning to apply higher figures to certain grades and it is expected this will be extended to other classifications in the near future. No. 24 hot-rolled annealed are quoted 2.30c, Pittsburgh, up $3 a ton; and galvanized, at 2.85c. Heavy blue annealed sheets also are up. Cold-rolled sheets, however, are easier. Republic Steel Corp. in the past week was to have made its first shipment of license plate stock to Columbus, O., having booked 1100 tons recently.

Chicago—Sheet production is only a shade over 25 per cent. In the last few days prices of some sheets have been easier, as increasing pressure became effective. Hot-rolled sheets are quoted a flat 1.70c, mills, instead of 1.70c to 1.80c, while prices as low as 2.25c have been made for No. 24 hot-rolled annealed. One price, 2.80c, mills, has been quoted recently for No. 24 galvanized. A differential of $1 over the mill prices still is maintained for delivery in the Chicago switching district. All producers, however, state that prices $2 to $3 a ton from the extreme low quotations made recently will become effective here soon.

St. Louis—Sheet producers and distributors report a slight improvement in business, and better prospects. No. 24 hot rolled has been advanced from 2.62½c to 2.67½c, delivered, St. Louis; and No. 24 galvanized, from 3.17½c to 3.22½c.

Current Finished Steel Prices

Delivered prices subject to freight surcharge corrected to nearest ½c. Prices in cents per pound unless otherwise stated

Steel Sheets

HOT ROLLED No. 10

Pittsburgh, base	1.60c to 1.70c
Gary, Ind. Harbor, base	1.70c
Chicago, del.	1.75c
New York, del.	1.95c to 2.00c
Birmingham, base	1.75c to 1.85c
Philadelphia, del.	1.86c to 1.96c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.75c to 1.85c
Chicago, district mills	1.85c
Chicago, delivered	1.90c
Philadelphia, del.	2.01c to 2.11c
New York, del.	2.10c
St. Louis, delivered	2.12½c
Birmingham	2.00c
San Francisco c.i.f.	2.35c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.15c to 2.25c
Gary, Ind. Harbor, base	2.25c
Chicago, del.	2.30c
New York, del.	2.50c to 2.65c
Philadelphia, del.	2.56c to 2.61c
Birmingham, base	2.45c to 2.55c
St. Louis, del.	2.67½c
San Francisco, c.i.f.	2.90c

GALVANIZED NO. 24

Pittsburgh, base	2.70c to 2.80c
Gary, Ind. Harbor, base	2.80c
Chicago, del.	2.85c
Philadelphia, del.	3.01c to 3.16c
Birmingham, base	3.05c
St. Louis, del.	3.22½c
San Francisco, c.i.f.	3.40c

AUTOMOBILE NO. 20

Pittsburgh, base	2.75c to 2.90c

FURNITURE

Pitts., No. 10 heavy	2.55c to 2.65c
Pitts., No. 20 light	3.15c to 3.25c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.50c to 2.55c
Gary base	2.60c to 2.65c
St. Louis, del.	2.87½c

HEAVY COLD ROLLED NO. 10

Pittsburgh base	2.20c to 2.30c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, del.	2.25c to 2.35c
Philadelphia, del.	2.41c to 2.56c
New York, del.	2.45c to 2.55c
St. Louis, del.	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.85c
Chicago, del.	2.90c
Philadelphia, del.	2.96c to 3.16c
New York, del.	3.00c to 3.10c
St. Louis, del.	3.22½c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

Tin plate, coke base	$4.75
Gary, Ind., base 10 cents higher	
Long ternes, 24, unassorted, 2.75c to 2.85c	

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing, (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind. Chicago, $1 over Pitts-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.50c
Philadelphia, base	1.69½c
New York, delivered	1.80c
Boston, delivered	1.92c to 2.02c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.70½c
Lackawanna, N. Y. base	1.60c
Birmingham, Ala., base	1.70c
Coatesville, Pa., base	1.60c
Pacific Coast, c.i.f.	1.80c to 1.85c
St. Louis, del.	1.97½c

Structural Shapes

Pittsburgh, base	1.50c
Philadelphia, del.	1.65c
New York, del.	1.77c to 1.87c
Boston, del.	1.90½c to 2.00½c
Chicago, base	1.60c to 1.70c
Cleveland, del.	1.70½c
Lackawanna, N. Y., base	1.60c
Birmingham, Ala., base	1.70c
Pacific Coast, c.i.f.	2.05c
Do., wide flange	2.15c

Bars

SOFT STEEL

Pittsburgh, base	1.50c
Chicago, base	1.60c to 1.70c
Birmingham, Ala., base	1.70c
Lackawanna, N. Y., base	1.60c
Pacific Coast, c.i.f.	2.05c
Cleveland, base, local del.	1.55c
Cleveland, base, out. del.	1.55c
Philadelphia, del.	1.81c
New York, del.	1.85c to 1.95c
Boston, del.	1.97c to 2.02c
Pittsburgh, cold finish	1.65c to 1.75c
Pittsburgh, forg. qual.	1.75c to 1.85c

RAIL STEEL

Chicago Heights	1.50c to 1.60c
Eastern mills	1.30c
Pittsburgh	1.30c to 1.35c

IRON

Chicago, base	1.70c
New York, delivered	1.85c to 1.95c
Philadelphia, delivered	1.86c to 1.96c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Stock lengths, mill	1.60c
Chi., billet	1.75c to 2.00c
Chi., rail steel	1.55c to 1.80c
Chi., rail steel, bridges and culvert	1.40c to 1.50c
Philadelphia, cut lengths	2.06c
Cleveland, cut lengths	1.75c

Cold Finished Bars, Shafting

Base Pittsburgh, Chicago, Buffalo and Cleveland	2.00c
Shafting, turned and ground, Pittsburgh, Cumberland, Md.	2.35c to 2.80c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Wrought Washers

Carloads, Pitts. dist.	$6.50 to 6.75 off
Carloads, Chicago dist.	7.00 to 7.50 off

Alloy Steel

Hot Rolled—F.o.b. Mills

Alloy Quality Bars, 2.65c, mill

S.A.E.	Alloy Diff.	
2000	0.25	4600 .20 to .30 Mo. 1.25-1.75 Ni. 1.05
2100	0.55	5100 .80 - 1.10 Cr. 0.45
2300	1.50	51.00 Cr. spring 0.20
2500	2.25	6100 bars 1.20
3100	0.55	6100 Spring 0.95
3200	1.35	Cr., Ni., Van. 1.50
3300	3.80	Carbon Van. 0.95
3400	3.20	9250 (flats) 0.25
4100 .15 to .25 Mo.	0.50	9250 (rds.,sq.) 0.50

Strip, Hoops, Bands

Hot strip, to 6-in., Pitts.	1.50c to 1.55c
Do, 6 1/16 to 24-in., Pitts.	1.40c to 1.45c
Hot strip to 6 in. Chi.	1.60c to 1.65c
Do, 6 1/16 to 24 in.	1.50c to 1.55c
Cooperage hoop, Pitts.	1.60c to 1.70c
Do., Chicago	1.70c to 1.80c
Cold-roll. strip, Pitts., Cleve.	1.90c to 2.00c
Worcester, 3 tons, over	2.15c

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	24.00 to 27.00
Light rails, 25-45, mills	$34.00
Light rails, Chicago	$36.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, railroad, 7/16-in. and smaller, Pitts.	2.60c
Spikes, boat, barge, Pitts.	2.90c
Track bolts, Chicago	3.50c
Do, standard, jobbers	75 off list
Track bolts, Chicago	3.50c
Tie plate, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread 75, 10 and 10 off
Rolled thread ⅝ x 6 and smaller take 10 per cent lower list.
Eagle list 75, 10 and 10 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts 75, 10 and 10 off
Tire bolts 60, 10 and 10 off
Stove bolts, 80-25-10 off in pkgs.; 80 25-10-2½ off in bulk.
Rolled thread machine bolts, ⅝ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished 75, 10 and 10 off

HEXAGON CAP SCREWS

Milled 80-10-10-5 off
Upset 1 in. diam. and smaller 85-10 off

SQUARE HEAD SET SCREWS

Milled 80-5 off
Upset, 1 in. and smaller 80-10-5 off
Upset, larger than 1 in. 80-5 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh 2.50c
Do. less carloads, 5 kegs or over 2.75c; less than 5 kegs, 2.90c.
Chain, BB, BBB, 9/16-1⅛ in. 33 1/3 off
Sheet piling, Pitts. 1.90c

Rivets

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. smaller, Pitts.	70, 10 and 5 off
Chicago, Cleve.	70, 10 and 5 off

Bars

Demand Holds Well in Absence of Usual Automotive Buying—January Rate Is Continued

BAR PRICES, PAGE 41

Chicago—Tapering in specifications from the automotive partsmakers and western automotive builders, as well as implement works, has left a void, which is filled in by slightly broader specifications from miscellaneous manufacturing buyers. On the other hand, contract orders have gained materially. Many of these are small but the volume last week was the best in about 90 days. Weakness in the 1.70c, Chicago, price for soft steel bars is due chiefly to pressure from deformed bar fabricators and the automotive industry. Quotations of 1.60c are named only for attractive orders.

New York—Although commercial steel bars are unchanged at 1.50c, Pittsburgh, a stronger tone prevails. This appears to be based largely on the determination of sellers to adhere rigidly to this figure as a minimum, rather than on improvement in demand. Jobbers and bolt and nut manufacturers, two of the larger consuming groups, show little interest.

Philadelphia—Some small buying by jobbers has been noted in a generally dull bar market. The usual minimum is 1.50c, Pittsburgh, although occasional shading is noted.

Pittsburgh—Steel bar demand is holding its own, with occasional gains noted in requirements of some automotive interests. Total specifications, however, are little changed from the January rate. The market usually is 1.50c, Pittsburgh.

Youngstown, O.—Consumers of common steel bars are taking a fair aggregate tonnage on carefully selected specifications. Bar mill operations in this district have broadened slightly. Alloy steel barmakers continue to receive specifications mainly for immediate requirements. Common steel bars are 1.50c, Pittsburgh.

Cleveland—Spottiness in specifications rules in the soft steel bar market and operations in this district's forging plants have slackened. Bar mills supplying local consumers have felt a sharp curtailment in orders, the slight bulge in mid-January which is now being shipped being sufficient to care for present requirements. The Cleveland base of 1.55c is apparently applied to the general trade for both local and outside delivery.

Tata Iron & Steel Co., Jamshedpur, India, in November produced 37,727 tons of finished steel, 37,452 tons in October and 35,309 tons in September. Pig iron production in November by this company was 75,319 tons, states the department of commerce.

Tin Plate Orders Placed By Can Manufacturers

Tin Plate Prices, Page 41

Pittsburgh—Despite a slight gain in tin plate specifications, business continues seasonally light. Operations have increased a few points to 35 to 40 per cent with some plants running full, but others are at a curtailed rate. Canmakers are placing tin plate orders cautiously, although there are no developments to provide any accurate estimate as to the volume of leading food packs this year. Tin plate continues $4.75, Pittsburgh, per base box.

New York—The American Can Co. is reported to have placed with independent makers some contracts for tin plate in addition to its award of more than 400,000 tons to the leading maker last October. The exact tonnage has not been announced, though it is understood its requirements will be less than specified last year. This consumer is reported to be the last of the larger buyers to close.

Cold-Finished Bar Sales Record Auto Slowing

Cold Finished Prices, Page 41

Pittsburgh — Cold-finished bar shipments and incoming business are tending downward slightly as a result of hesitation in automotive operations. Demand from the Detroit district is spotty. Specifications from miscellaneous consumers lack improvement. The market holds at 2.00c, Pittsburgh.

Cleveland — With automotive orders in this district and in Detroit somewhat slower and of a more spotty character than in January, the cold-finished bar market lends little immediate prospect of improvement. The 2.00c, Cleveland base, is without change.

Plates

Ship, Barge Work Brings Better Demand Than Tank and Bridge—General Inquiry Light

PLATE PRICES, PAGE 41

New York—A tonnage of plates, probably exceeding 1000, is involved in two pipeline dredges for river use on which bids were taken Feb. 5 by the chief of engineers, United States army. The dredges are 200 feet long, 48 feet wide and have eight-foot draft, all steel, with watertube boilers and 20-inch electric dredge pump. Time of delivery is a factor in the bids. Ten bids were received, including Dravo Contracting Co., Pittsburgh; Dubuque Boat & Boiler Co., Dubuque, Iowa; Ellicott Machine Co., Baltimore; Charles Hegewald Corp., New Albany, Ind.; Howard Shipyard & Dock Co., Jeffersonville, Ind.; Ingalls Iron Works, Birmingham, Ala.; Marietta Mfg. Co., Point Pleasant, W. Va.; Midland Barge Co., Midland, Pa.; New York Shipbuilding Co., Camden, N. J.; Nashville Bridge Co., Nashville, Tenn.

Platemakers are figuring on about 300 tons of plates for a boat the harbor supervisor has awarded the Spedden Shipbuilding Co., Baltimore. Miscellaneous buying is light with 1.60c, Coatesville, Pa., quoted on most inquiries.

Philadelphia—Ship tonnage is a leading item in current plate demand. The principal inquiry is for 600 tons for reconditioning four vessels for the American Scantic Line, on which the New York Shipbuilding Co., Camden, N. J., is low bidder. Plates are going usually at 1.60c, Coatesville, Pa., for carlots.

Pittsburgh—Orders and prospective work in floating equipment involve about 1250 tons of fabricated plates and shapes. New inquiry, however, is quiet and orders for miscellaneous uses continue light. Plates usually are 1.50c, Pittsburgh, higher prices generally having disappeared.

Chicago—As only scattered storage tank inquiries appear, the outlook in the oil country is disappointing. No actual revival in refinery storage tank work is in sight. Plate prices are nominal at 1.60c to 1.70c,

Chicago. Mill operations, chiefly for bridge work, are 20 per cent and over. General resumptions in railroad shops in this territory result in a shade more specifications, but these orders do not run into tonnage.

Cleveland—Generally, plates are 1.50c, Pittsburgh base. Even this figure lacks particular test from large orders. Some business is still claimed to be on mill books at 1.60c, Pittsburgh, but for odd and special sizes.

Inquiry may be revived soon by a local shipbuilding interest for three tank tops, requiring 500 tons of plates apiece.

Contracts Placed

650 tons, eastern and western yards, navy, to John T. Hill, Baltimore; floor plate steel, Alan Wood Steel Co. awarded class 380B, f.o.b. works, at $2327.84.

250 tons plates and shapes, cattle barge, for Jersey City Stock Yards Co., Jersey City, N. J., to Dravo Contracting Co., Pittsburgh.

100 tons, 200,000-gallon steel water tank on 100-foot tower, naval air station, Sunnyvale, Calif., to Pittsburgh-Des Moines Steel Co., Pittsburgh, $10,360.

100 tons, standpipe, Lancaster, Pa., to Lancaster Iron Works, Lancaster.

Unstated tonnage, steel water tower and tank, veterans hospital, Biloxi, Miss., to Pittsburgh-Des Moines Steel Co., Pittsburgh, $7480.

Unstated tonnage, steel water tank and tower, veterans hospital, Palo Alto, Calif., to Huber Co., Los Angeles, $7274.

Contracts Pending

1000 tons plates and shapes, two dredges, for United States engineers, St. Louis district; Dravo Contracting Co., Pittsburgh, low bidder.

510 tons, approximate, 85 helium storage tanks, 80 feet long, two feet outside diameter, ¾ to ⅝-inch wall, bureau of yards and docks, naval air station, Sunnyvale, Calif. (Mountain View; A. O. Smith Corp., Milwaukee, and Hedges-Walsh-Weidner Co., Chattanooga, Tenn., low; bids on delivered and f.o.b. basis.

500 tons, two barges, Inland Waterways Corp., St. Louis.

300 tons, boat for New York harbor supervisor, general contract to Spedden Shipbuilding Co., Baltimore.

300 tons, penstock for Los Angeles. Bids Feb. 18.

100 tons, navy, various stations; 53 tons medium black, Brooklyn, N. Y., John T. Hill, Baltimore, low; 35 tons, boiler plate, Mare Island, Calif., Worth Steel Co., Claymont, Del., low.

Unstated tonnage, steel water tank, district training school, Washingon; Chicago Bridge & Iron Works, Chicago, low.

Cutler-Hammer Inc., Milwaukee, electrical control equipment, reports net shipments for 1931 at $5,907,800, compared with $9,342,899 in 1930. Cash as of Dec. 31, 1931, amounted to approximately $675,000, against $401,626 at the end of 1930.

Railroads

New York Buying 5360 Tons Rails—Chicago Fastening Market Improves in Activity

TRACK MATERIAL PRICES, PAGE 41

Chicago—Orders for 4000 to 5000 tons of track fastenings, plus releases on some of the old orders, have aided the trackage steel market. Railroad shop activity is becoming more pronounced. About 35 to 40 per cent of the Nickel Plate rail order will be booked with western mills. The Southern Pacific's 20,000 tons of rails is to go to Colorado and Birmingham, Ala., mills. Santa Fe for 1932 is spending between $12,000,000 and $13,000,000 for maintenance, trackage and bridge work, in addition to construction of its new line from Boise City, Okla., to Las Animas, Colo. Burlington will spend approximately $23,000,000 in maintenance and improvements, $15,000,000 of which will be for track and bridge maintenance. Included in the budget is provision for completing the new 110-mile extension from Childreth to Pampa, Tex. Local rail mills will resume production probably at about 20 per cent next week. The Colorado rail mill again is active.

Colorado & Southern railroad is inquiring for 107,712 feet (for 10.2 miles of railroad) second-hand 90-pound rail, suitable for relaying, and drilled in accordance with Burlington Lines Standard No. 6936. The road also wants accessories consisting of 3300 pairs of No. 1 90-pound second-hand 24-inch angle bars; 35,000 second-hand 7 x 9 inch 90-pound tie plates and 13,200 second hand 1 x 5½-inch track bolts. Supplies must comply with specifications on file at the office of W. C. Weldon, purchasing agent, Railway Exchange building, Denver, and are to be delivered before March 5.

Washington—W. Ames & Co., Jersey City, N. J., is low on 50,000 pounds of track spikes for Panama at $1175, delivered.

New York—Bids close Feb. 19 on 5360 tons of rails for the Board of Transportation, subway work, also on fastenings and special work.

Western Maryland has divided 2000 tons of rails with Carnegie Steel Co., Pittsburgh, and Bethlehem Steel Co., Bethlehem Pa., and has also distributed several hundred tons of spikes and tie plates.

Philadelphia—Indications that the Pennsylvania railroad may not apply to the Reconstruction Finance Corp. for aid as originally intended, have dulled prospects of their resuming construction schedules here soon. These schedules were deferred about a month ago.

Pittsburgh—Railroad buying is as light as formerly, with little change noted in new inquiry. Outlook for rail buying still is regarded as unfavorable, despite recent changes in the financial position of the roads.

Cleveland—Erie railroad tie-plate inquiry for about 5000 tons, has not yet been closed, although expected to be soon. No inquiries are out for other track material for the recent Erie rail order; this will involve spikes and rail anchors. Nickel Plate rail inquiry still is being withheld by the road's engineers, making last-minute revisions. This year the road will inquire for the total amount of its purchase with no options; in 1931 it inquired for about 27,000 tons, 60 per cent of which was for outright purchase and 40 per cent on option, but the option was never exercised.

Rolling of the Erie railroad rails will go ahead this month, approximately three-quarters of the order being specified to be rolled by April. Rolling of the anticipated rail order for the Nickel Plate will not commence before April at the earliest. The Collinwood shops of the New York Central were scheduled to resume Feb. 15 with 1200 men called back to work.

Car Orders Placed

Cudahy Packing Co., Chicago, 25 underframes, to Pullman Car & Mfg. Corp., Chicago, for rebuilding of cars awarded to own shops.

Pacific Northwest Public Service Co., Portland, Oreg., 15 street cars, to J. C. Brill Co., St. Louis.

Rail Orders Placed

Western Maryland, 2000 tons, to Carnegie Steel Co., Pittsburgh, and Bethlehem Steel Co., Bethlehem, Pa.

Car Orders Pending

Chicago Belt Line, repairs to 100 hopper cars.

Rail Orders Pending

Board of Transportation, New York, 5360 tons, including 420 tons guard rail, city-built subway system; bids Feb. 19. Also bolts, nuts and washers, spikes, tie plates, joint bars, malleable and cast iron and special work.

Panama canal, 5000 tie plates for 70-pound rail; bids Feb. 17.

Structural Shapes

Detroit Postoffice Attracts Bids—Missouri Bridge Work Takes 1000 Tons—Plain Material Price Erratic, Chicago Weaker — Temporary Suspension in Public Work

STRUCTURAL SHAPE PRICES, PAGE 41

New York—With temporary suspension of much public work, little construction by the railroads and an absence of private building, demand for fabricated structural steel has reached a low point for this territory. Prices on both plain and fabricated material are untested on sizable lots. Several abandoned state contracts have been readvertised for completion and awarded. Lettings in January, according to the Structural Steel Board of Trade of New York, totaled 14,059 tons against 8028 tons in December and 34,951 tons in January of 1930. Bridge and engineering projects are not included.

Boston—Contract for the superstructure, state bridge, at Westfield, Mass., 750 tons, went to low bidder. Lettings outside this award are few in number and small in tonnage. General contract for the Rindge technical high school, Cambridge, Mass., is still pending. Nicholas Co., Philadelphia, is low on the Gloucester, Mass., postoffice at $189,879. Standard Structural Steel Co., Hartford, Conn., took a small tonnage of shapes and bars for an addition, Loomis institute, Windsor, Conn.

Philadelphia—Curtailment is felt by some fabricating shops with fabricated material prices unsettled and plain material quotations easy at 1.60c, nearest mill, in carlots.

Pittsburgh—Volume of structural inquiry and awards is restricted by the lack of large individual items. Only a few of recent orders involve more than 500 tons. Interest currently is centered on the Detroit postoffice, steel for which is expected to be placed shortly. Plain shapes usually are 1.50c, Pittsburgh, with specifications from smaller fabricators very light.

Cleveland—Structural fabricators have before them a large volume of small jobs running from 20 to 50 tons apiece, perhaps as many as in normal years at this time, the only difference being in tonnage per job now being considerably smaller, with large projects failing to go ahead. A Masonic building, Lakewood, O., and the Catha building, Toledo, O., each take 150 tons. Bids went in Feb. 11 for clearing the site for the $150,000 Painesville, O., postoffice. The market on plain material is 1.50c, Pittsburgh. Two local contractors are figuring the Detroit postoffice, for closing Feb. 15, to take about 15,000 tons.

Chicago—Structural business active here and at other western points is 15,000 to 20,000 tons, mostly federal and state work. Century of Progress exposition officials announce a building program of $4,500,000 to be started within the next few months, which includes the Federal and States building, costing $1,000,000, and foreign buildings, $1,000,000. Chrysler Corp., Detroit, is planning a large structure on the exposition grounds. A number of small jobs, 50 to 75 tons, have come out recently. Weakness is shown in the 1.70c mill price, and much of the shipments is on lower-priced plain material contracts, for which protections have been extended. The range now is 1.60c to 1.70c, Chicago.

Birmingham, Ala. — Business is lagging and shops are not maintaining more than 40 per cent capacity. Disappointment is shown in slow closing of pending contracts.

Contracts Placed

1650 tons, nurses' home, Harlem hospital, New York, to Bethlehem Fabricators Inc., Bethlehem, Pa., through Psaty & Fuhrman, contractors.

1600 tons, Mississippi dam, Rock Island, Ill., to unstated.

1500 tons, bridge, Savannah, Ill., to McClintic-Marshall Corp., Bethlehem, Pa.

1000 tons, piling, Mississippi dam, Rock Island, Ill., to Illinois Steel Co., Chicago.

1000 tons, bridge work for Missouri highway commission, to Stupp Bros. Bridge & Iron Co., St. Louis.

750 tons, bridge over Westfield river, Massachusetts, to Boston Bridge Works Inc., Boston.

550 tons, Ohio state bridges; 115 tons to International Derrick & Equipment Co., Columbus, O.; 150 tons to American Bridge Co., Pittsburgh; 100 tons to Mt. Vernon Bridge Co., Mt. Vernon, O.; and 70 tons to Fort Pitt Bridge Works Co., Pittsburgh.

400 tons, Chrysler Motor Co. plant, Slauson and Eastern avenue, Los Angeles, to McClintic-Marshall Corp., Bethlehem, Pa.

398 tons, state bridge, Guadalupe river, Texas, to McClintic-Marshall Corp., Bethlehem, Pa.; Thomas & Ratliff, Rogers, Tex., contractors. Petroleum Iron Works, Beaumont, Tex., awarded 84 tons of tubes and cutting edges.

360 tons, power house, Sing Sing prison, Ossinning, N. Y., to Lackawanna Steel Construction Co., Buffalo.

340 tons, Fairview hospital, Waymart, Pa.; 250 tons to Robinson Iron & Steel Co., Philadelphia, and 90 tons to Bethlehem Fabricators Inc., Bethlehem, Pa.

325 tons, viaduct for Milwaukee Electric Railway & Light Co., Milwaukee, to Milwaukee Bridge Co., Milwaukee.

275 tons, filtration plant, Lancaster, Pa., to A. B. Rote & Co., Lancaster, Pa.

250 tons, highway bridge over B. M. T., Linden boulevard, Brooklyn, N. Y., to Phoenix Bridge Co., Phoenixville, Pa., for National Bridge Works, Long Island City, N. Y.

200 tons, bridge, Mackinaw, Ill., to International Steel & Iron Co., Evansville, Ind.

125 tons, store and office building, Milwaukee, to Milwaukee Bridge Co., Milwaukee.

125 tons, practice state school, New Paltz, N. Y., to Belmont Iron Works, Philadelphia; F. & C. Haerter, West New York, N. J., contractors. Noted Feb. 1 as going to unstated fabricator. Joseph T. Ryerson & Son. Inc., New York, awarded concrete reinforcing bars, under 100 tons.

104 tons, Ohio highway department bridges, Hancock and Jackson counties, to Ben-Tom Supply Co., Columbus, O., through A. D. Ebersbach, Middleport, O., and Frost Construction Co., Findlay, O., contractors. Same interest awarded 42 tons reinforcing steel.

100 tons or more, shapes and bars, church and school, Madonna Manor, Marrero, La., to Jones & Laughlin Steel Corp., Pittsburgh, and Harold Raymond, New Orleans; Lionel F. Favret, New Orleans, contractor.

100 tons, state highway bridge, Needham-Wellesley route, Massachusetts, to Albany Bridge Co., Albany, N. Y.

Awards Compared

	Tons
Awards, week ended Feb. 13	**12,700**
Awards, week ended Feb. 6	**14,526**
Awards, week ended Jan. 30	**10,536**
Awards, this week in 1931	**21,025**
Av. weekly awards, 1931....	**34,236**
Av. weekly awards, 1932....	**14,735**
Av. weekly awards, Jan.	**16,346**
Total awards to date, 1931	**173,158**
Total awards to date, 1932..	**103,147**

Contracts Pending

7500 tons, deckwork, viaduct, route 25, New Jersey; bids rejected and project temporarily suspended. McClintic-Marshall Corp., Bethlehem, Pa., was low.

3000 tons, Federal and States building general exhibit, special and foreign buildings for Century of Progress exposition, Chicago; bids to be asked within the next 30 days.

2000 tons, estimated, army and navy general hospital, Hot Springs, Ark.; National Construction Co., Washington, low, $1,023,000.

2000 tons, highway bridges in Wisconsin; bids about Feb. 23.

1811 tons, University bridge approaches, Seattle; General Construction Co. and

Puget Sound Bridge & Dredging Co., Seattle, contractors.
1000 tons, municipal auditorium, Grand Rapids, Mich.
900 tons, Catholic hospital, Darby, Pa.; John McShain, Philadelphia, contractor; Bethlehem Fabricators Inc., Bethlehem, Pa., low.
800 tons, two floating cranes for Mare Island and San Diego naval yards, California; bids opened.
550 tons, highway bridge, Shoal river, Florida.
500 tons, two barges, Inland Waterways Corp., St. Louis.
500 tons, Illinois highway bridge, Sangamon county, Ill.
500 tons, overhaul shop, Pearl Harbor, T. H., Newport Drydock Co., low.
400 tons, postoffice, Terre Haute, Ind.
400 tons, postoffice, Davenport, Iowa.
350 tons, sheet piling, bascule bridge, Corpus Christi, Tex.; bids Feb. 29.
200 tons, United States embassy building, Lima, Peru; North American Construction Co., Jacksonville, Fla., low.
200 tons, Eagle Picher Mining & Smelting Co., Picher, Okla.
200 tons, Grant store, Los Angeles; bids being taken.
175 tons, transit shed No. 2, Oakland, Calif.; bids Feb. 27.
150 tons, West Side Masonic building, Lakewood, O.
150 tons, building for Catha Building Co., Toledo, O.
125 tons, addition, soldiers' home, Chelsea, Mass.
110 tons, two-story police station, North street, Boston; bids Feb. 17.
104 tons, movable highway bridge, Delaware City, Del., branch channel; also 27 tons bars; United States engineer, Wilmington, Del.
100 tons, shapes and bars, dormitory, Wheaton college, Norton, Mass.
100 tons, Laurel Canyon apartments, Hollywood, Calif.; bids to be called for shortly.
Unstated tonnage, building for Chrysler Corp., Detroit, on Century of Progress exposition grounds, Chicago.

Semifinished Makers Try To Strengthen Prices

Semifinished Prices, Page 49

Pittsburgh—Business in all descriptions of semifinished steel is quiet and little changed from the January rate. Prices are tested on only small lots, generally being $27 for rerolling billets and slabs, $26 for sheet bars, $34 for forging billets and $37 for wire rods. Some concessions are noted on forging billets and sheet bars.

Youngstown, O.—Competition from makers of semifinished steel in other districts is less aggressive. Consumers are taking material as they require, and in no larger amounts than formerly, though there is a little better tone to the market. Billets and slabs are $27, Youngstown and Cleveland; and sheet bars, $26.

Chicago—Efforts are being made to strengthen semifinished steel prices in this market. Sheet bars continue somewhat weak at $28, Chicago. Forging billets are $34-$35.

Concrete Bars

Rock Island, Ill., Dam, Taking 5000 Tons, Goes to Illinois Steel Co.—Foreign Bars Appearing at Boston—Prices Reflect Listless Market—Week's Awards Gain

REINFORCING BAR PRICES, PAGE 41

New York—Nearly 300 tons of reinforcing bars have been placed for state projects at West Haverstraw and Beacon, N. Y., but lettings have slumped with recession in practically all types of construction. Prices have reflected the listless market with easiness, 1.85c delivered New York, applying to a larger part of the limited business, although 1.95c has not disappeared on smaller lots.

Boston—Demand for reinforcing steel is for small lots with new inquiry light. Most activity is confined to jobs requiring under 100 tons. A small tonnage is required for a buoy wharf, lighthouse bureau, Bristol, R. I. Imports of bars have increased recently with unfavorable influence on prices.

Pittsburgh—Reinforcing bar business is quieter than in January. Inquiry is confined to small lots, although several large tonnages were included in recent awards. Although the recent 1.60c, Pittsburgh, market has been subjected to shading, a stronger stand on prices is looked for shortly.

Cleveland—Financial difficulties involving the sale of bonds for the Niles, O., bridge are holding up actual award to E. H. Latham Co., Columbus, O. State bridges, for past months a bulwark to reinforcing bar business, have terminated.

Chicago—Fresh inquiry for reinforcing bars has flattened sharply, even in small-lot projects. Road letting for next season from several of the North Central states continues active.

Illinois Steel Co. has taken the contract for 5000 tons of reinforcing steel for the Rock Island, Ill., dam.

Awards Compared

	Tons
Awards, week ended Feb. 13	**7,120**
Awards, week ended Feb. 6	**2,795**
Awards, week ended Jan. 30	**3,701**
Awards, this week, 1931....	**6,820**
Av. weekly awards, 1931	**6,808**
Av. weekly awards, 1932....	**6,022**
Av. weekly awards, Jan.....	**7,144**
Total awards to date, 1931	**48,104**
Total awards to date, 1932	**42,153**

Contracts Placed

5000 tons, roller dams and locks, Rock Island, Ill., dam, to Illinois Steel Co., Chicago.
600 tons, Illinois road work to Truscon Steel Co., Youngstown, O.; previously reported to several unstated fabricators.
445 tons, vaults, First National bank, Wall street and Broadway, New York, to Rivet-Grip Co., New York, to be fabricated by a United States Steel Corp. subsidiary; York Safe & Lock Co., York, Pa., vault contractor.
300 tons, First Narrows water tunnel, Vancouver, B. C., to Evans, Coleman & Evans Ltd., Vancouver, B. C.
200 tons, reconstruction home, state project, West Haverstraw, N. Y., to Tidewater Structural Materials Corp., Yonkers, N. Y.; Agostini Bros., contractors.
200 tons, sewer, Columbus, O., to Concrete Steel Co., New York.
200 tons, Illinois road work, to Calumet Steel Co., Chicago.
165 tons, state bridges, Austin and Guadalupe counties, Tex., to Concrete Engineering Co., Omaha, Nebr. Thomas & Ratliff, Rogers, Tex., contractors.
135 tons, dormitory, Atlanta university, Atlanta, Ga., to Kalman Steel Corp., Bethlehem, Pa.; Barge - Thompson Co., Atlanta, contractor.
115 tons, piers for Wenatchee, Wash., state bridge, to Pacific Coast Steel Corp., Seattle.
100 tons, approximate, laundry building, staff house and tunnels, Mattewan state hospital, Beacon, N. Y., to Fireproof Products Co., New York; Miller & Gaynor Co., Poughkeepsie, N. Y., contractor.
160 tons, government work, Panama Canal zone, to United States Steel Products Co., New York.
100 tons, Chrysler Motor Co. plant, Slauson and Eastern avenues, Los Angeles, to unnamed interest.

Contracts Pending

746 tons, University bridge approaches, Seattle; General Construction Co. and Puget Sound Bridge & Dredging Co., Seattle, contractors.
300 tons, grade elimination, Cumberland, Md.
175 tons, Catholic hospital, Darby, Pa.; John McShain, Philadelphia, contractor.
150 tons, physics building, University of California, Los Angeles; bids opened.
150 tons, postoffice, Davenport, Iowa.
100 tons, state bridge, Salt Fork, Brazos river, Young county, Texas; Buckner Bros., Cleburne, Tex., contractors.
100 tons, library, Teachers' college, Fresno, Calif.; bids opened.
100 tons, San Gabriel dam No. 2, Los Angeles county, Calif.; bids opened.
100 tons, postoffice, Terre Haute, Ind.

Strip

Concessions at Chicago While Advance Is Talked in East—Production Holding Steady

STRIP PRICES, PAGE 41

Pittsburgh—Shipments of strip steel are fairly steady, although incoming business from some automotive interests is heavier than in January. Total automotive demand lacks the seasonal upturn ordinarily experienced at this time. Prices are slightly steadier. Minimum prices on hot strip usually are 1.40c and 1.50c and on cold-rolled strip 1.90c. Price advances are in prospect for the near future. Strip mill operations hold around 20 to 25 per cent.

Chicago—Concessions of $1 a ton are being made in hot-rolled strip steel for attractive business. The range for the wider strip is more general now at 1.50c to 1.55c, Chicago. Production remains at 25 to 30 per cent. Cold-rolled strip output is about 20 per cent.

New York—Hot strip steel is quoted here at 1.40c to 1.45c and 1.50c to 1.55c, Pittburgh, for the wide and narrow, respectively, with the inside figures the more prevalent. Cold-rolled strip is 1.90c to 2.00c, Pittsburgh. Trading is slack.

Philadelphia—Steel strip continues to move slowly with prices unchanged at 1.40c to 1.50c and 1.50c to 1.55c, Pittsburgh, for wide and narrow. Cold-rolled is quoted at 1.90c to 2.00c, Pittsburgh.

Youngstown, O.—Steel strip buyers apparently are becoming more conservative, although specifications continue about on a level with the past several weeks. Narrow strip seems to be more popular than wide. Quotations continue irregularly low and profitless.

Cleveland—Small local stamping concerns are less active so far in February than in January, thus curtailing hot- rolled strip purchases and further adding to the spotty character of the market. For the small and general class of buyers 1.45c and 1.55c, Pittsburgh, is quoted. Only a few accounts with preferred tonnages to place are commanding $1 a ton under these figures. An unconfirmed report is that a price advance is to be attempted in the hot-rolled market shortly.

Operations Down to 27 Per Cent; 26 This Week

Youngstown, O.—Ingot production at 36 per cent last week was up one point from the week before. Possibility of near future Ford Motor Co. purchases of sheets and strips has lent encouragement to valley mills.

Pittsburgh—Ingot production held during the past week at 23 per cent, but a slight improvement is in prospect shortly. Blast furnace schedules are unchanged with 9 steelworks stacks active of 54. Sheet output held at 25 per cent with tin plate up slightly at 35 to 40. Strip and pipe production are unchanged at 20 to 25 per cent.

American Rolling Mill Co. has lighted a blast furnace stack at its Ashland, Ky., plant.

Operations, week of Feb. 3...	**27**
Operations, week of Feb. 6.....	**28.5**
Operations week of Jan. 30.....	**28.5**
Operations, this week, 1931....	**50**
High, 1931-32 (March 19).....	**57**
Low, 1931-32 (Dec. 26).....	**15-20**

Philadelphia — After consecutive weekly improvements since Jan. 2, steel operations in eastern plants were down one point last week to 17.5 per cent of capacity. Little change is expected this week.

Buffalo—A drop of about ten points in operations is indicated for this week to 25 per cent, from the year's peak of 35 per cent reached in the week ending Feb. 13. Staggered plant operations account for most of the drop. Rail business has accounted for a good deal of the former increase in ingot operations here, but it is doubtful whether rail mills will continue on the double turn rate. Last week 13 open hearths were operating, with nine or ten scheduled this week.

Cleveland—Steel production last week in the four mills here averaged 38 per cent, unchanged from the week prior. This represents six open hearths on at Corrigan, McKinney Steel Co., three at Otis Steel Co. and four at American Steel & Wire Co. Thus, 13 of 34 open hearths are on. Bourne-Fuller works of Republic Steel Corp. is inactive. The 38 per cent rate continues this week.

Chicago—Ingot production in the last week has held at 27 per cent, down about ½ point from the prior week. This week the rate is 25 per cent, as two independents have five fewer open hearths on. More semi-finished is being stocked. Nine of the district's 36 steelworks blast furnaces are active. Inland Steel Co. has two of its four steelworks stacks in blast. Rail mill operations this week will be about 20 per cent, the first rail mill production in this district in several weeks.

Birmingham, Ala.—With ten of 18 open-hearth furnaces of the Tennessee Coal, Iron & Railroad Co. and two of six for Gulf States Steel Co. making ingots, steel operations at 53 per cent last week were down seven points from the prior week. Awaiting additional business, the local rail mill is on slow schedule.

Warehouse Demand Shows Diminishing Trend

Warehouse Prices, Page 47

New York—Volume is light, well below the usual total for this period with little or no seasonal increase noted. Decline in construction is an important factor in the dullness. Prices are mixed. Most jobbers in selling sheets with combination orders are shading.

Philadelphia—No evidences of seasonal improvement are noted in the market. Prices are unchanged.

Baltimore—Following the recent reduction in plates, shapes and bars to 2.75c and in bands and hoops to 3.25c, local warehouse prices have been unchanged, with trading dull.

Pittsburgh—Volume is unchanged from the January rate and orders involve only small lots. Prices are slightly steadier.

Cleveland — Sales are depressed with a tendency among consuming interests to ask for price reductions in line with recent mill price easiness, but no revisions have been made on prices from stock.

Detroit—February sales of all steel products from warehouse are tending to be less when compared with the January rate. Small tool and die shops have been showing less activity.

Cincinnati — Moderate weather early in February has failed to bring out any spurt in warehouse demand for outdoor projects. Prices are unchanged.

Chicago—Both city and outside sales are extremely disappointing. February orders at least are no lower than January, but indicate no improvement.

Steel, Wrought and Cast Iron Pipe, and Tubing

Welded Iron, Steel Pipe

Base Price $200 Ton

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought pipe, Pittsburgh base.

BUTT WELD

	Steel			Iron	
In.	Blk.	Gal.	In.	Blk.	Gal.
½	58	44½	½	23	5
¾	62	50½	¾	28	11
1—3	64	52½	1—1¼	31	15
			1½—2	35	18

LAP WELD

2	57	45½	2	23	9
2½—6	61	49½	2½—3½	28	13
7—8	58	45½	4—6	30	17
9—10	56	43½	7—8	29	16
11—12	55	42½	9—12	26	11

BUTT WELD

Extra strong, plain ends

½	55	44½	¼ & ⅜	+13	+48
¾	60	49½	½	23	7
1—1½	62	51½	¾	28	12
2—3	63	52½	1—2	34	18

LAP WELD

Extra strong, plain ends

2	55	44½	2	29	13
2½—4	59	48½	2½—4	34	20
4½—6	58	47½	4½—6	33	19
7—8	54	41½	7—8	31	17
9—10	47	34½	9—12	21	8
11—12	46	33½			

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. Direct mill shipments, base, 5 and 2½. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

BOILER TUBES

Carload discounts, f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2—2¼	38	1¾	8
2½—2¾	46	2—2¼	13
3	52	2½—2¾	16
3¼—3¾	54	3	17
4	57	3¾—3½	18
4½—6	46	4	20
1½	1	4½	21

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal Iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

STANDARD COMMERCIAL SEAMLESS BOILER TUBES

COLD DRAWN

1 inch	61	3	46
1¼—1½	53	3¼—3½	48
1¾	37	4	51
2—2¼	32	4½, 5, 6	40
2½—2¾	40		

HOT ROLLED

2—2¼	38	3¼—3½	54
2½—2¾	46	4	57
3	52	4½ 5, 6	46

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Tubing

Cold drawn; f.o.b. mill discounts

Random lengths over 5 ft. 55%
Selected lengths, 1—18 ft. 53%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

Six-inch and over, Bir. ....$32.00 to 33.00
Four-inch, Birmingham .... 36.00 to 37.00
Four-inch, Chicago ..... 41.40 to 43.40
Six to 24-inch, Chicago..... 38.40 to 40.40
Six-inch and over, N. Y..... 28.00 to 30.00
Four-inch, New York ..... 34.50 to 36.50
Stand. fittings, Bir. base.... $100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

Warehouse Quotations at Leading Centers, in Cents Per Pound

(All Philadelphia prices subject to quantity differentials except reinforcing and Swedish bars)

STEEL BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.00c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Cleveland	2.75c
Detroit	2.85c
Houston	2.65c
Los Ang.	3.40c
New York‡(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.60c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.00c
St. Paul	3.00c
Tulsa	3.25c

IRON BARS

Baltimore	2.75c
Boston	3.25c
Buffalo	3.15c
Chattanooga	3.00c
Chicago	2.75c
Cincinnati	3.00c
Detroit	2.85c
New York‡(d)	3.10c
Philadelphia	2.45c
St. Louis	3.00c
Tulsa	3.25c

REINFORC. BARS

Baltimore	2.35c-3.00c
Boston	3.25c
Buffalo	2.95c
Chattanooga	3.00c
Cincinnati	3.00c
Cleveland	2.10-2.25c
Detroit	2.85c
Houston	3.00c
Los Ang. cl.	2.50c
Los Ang. lcl.	2.80c
New York	2.65c-3.10c
Phila.	2.26½c
Pittsburgh	2.60c
San Fran. cl.	2.60c
San Fran. lcl.	2.90c
Seattle	2.50c
St Louis	3.15c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland	2.95c
Detroit	3.10c
Houston	3.25c
Los Ang.	3.40c
New York(d)	3.10c
Philadelphia	2.45c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

PLATES

Baltimore	2.75c
Boston	3.35c
Buffalo	3.25c
Chattanooga	3.20c
Chicago	3.00c
Cincinnati	3.25c
Cleveland, ¼-in. and thicker	2.95c
Clev., 3/16-in.	3.20c
Detroit	3.10c
Det., 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.40c
New York(d)	3.30c
Philadelphia	2.45c
Phila. floor	5.10c
Pittsburgh	2.85c
Portland	2.50c
San Fran.	2.40c
Seattle	2.50c
St. Louis	3.25c
St. Paul	3.10c
Tulsa	3.50c

NO. 10 BLUE

Baltimore	3.25c
Boston	3.50c
Buffalo	3.50c
Chattanooga	3.50c
Chicago	3.20c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.35c
Houston	3.35c
Los Ang.	3.95c
N. Y. (d)	3.00c-3.40c
Portland	3.50c
Phila.*† (e)	2.90c
Pitts.**	3.00c to 3.10c
San Fran.	3.65c
Seattle	3.50c
St. Louis	3.45c
St. Paul	3.40c
Tulsa	3.70c

NO. 24 BLACK

Balt.*†	3.50c
Boston	4.20c
Buffalo	4.10c
Chattanooga	3.65c
Chicago	3.55c
Cincinnati	3.75c
Cleveland	3.25c
Detroit	3.50c
Los Ang.	4.70c
New York	3.50c-3.65c
Phila.*†(e)	3.40c
Pitts.**	3.40c
Portland	4.00c
San Fran.	4.15c
Seattle	4.00c
St. Louis	3.80c
St. Paul	3.545c
Tulsa	4.75c

NO. 24 GAL. SHEETS

Balt.*†	4.00c
Boston	4.75c
Buffalo	4.35c
Chattanooga	3.95c
Chicago	4.10c
Cincinnati	4.25c
Cleveland	3.75c
Detroit	4.00c
Houston	4.25c
Los. Ang.	5.10c
New York	4.00c-4.10c
Phila.*†(e)	3.75c
Pitts.**	3.90c
Portland	4.50c
San. Fran.	4.65c
Seattle	4.50c
St. Louis	4.35c
St. Paul	4.23c
Tulsa	5.10c

BANDS

Baltimore	3.25c
Boston	3.75c
Buffalo	3.35c
Chattanooga	3.20c
Chicago	2.95c
Cincinnati	3.20c
Cleveland	3.00c
Det. 3/16-in. & lighter	3.15c
Houston	3.65c
Los Ang.	4.30c
New York(d)	3.40c
Philadelphia	2.75c
Pittsburgh	2.95c
Portland	3.50c
San Fran.	3.75c
Seattle	3.50c
St. Paul	3.75c
Tulsa	3.45c

HOOPS

Baltimore	3.25c
Boston	4.90c-5.40c
Buffalo	3.90c
Chicago	3.50c
Cincinnati	3.75c
Cleveland	3.55c
Det. No. 14 & lighter	3.65c
New York	3.75c
Philadelphia	3.00c
Pittsburgh	3.60c
Seattle	4.90c
St. Paul	3.75c

COLD FIN. STEEL

Rounds & Hexagons

Baltimore (c)	3.30c
Boston	3.50c
Buffalo	3.15c
Chattanooga*	3.75c
Chicago	3.10c
Cincinnati	3.50c
Cleveland	3.10c
Detroit	3.40c
Los Ang. (a)	4.50c
New York	3.30c
Philadelphia*	3.30c
Pittsburgh	3.10c
Portland (a)	4.50c
San Fran.(a)	4.25c
Seattle (a)	4.50c
St. Paul (a)	3.85c
St. Louis	3.35c
Tulsa	4.65c

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

COLD ROLL. STRIP

Boston 0.100 in., 500 lb. lots	5.30c
Buffalo	5.25c
Chicago (soft) (b)	5.65c
Cincinnati	5.80c
Cleve. (b)	5.55c
Detroit	5.40c
Phila. (c)	4.55c
New York	4.55c

(b) Net base straightening, cutting, boxing 1 ton or more.

(c) Plus mill, size and quantity extras.

(d) Minus quant. diff.

(e) New mill classif.

‡Domestic bars.

*Plus quan. extras.

**Less than 25 sheets.

*†50 or more bundles.

Pipe

Steel Pipe Projects More Numerous — Hawthorne, N. Y., Buying 2000 Tons Cast

PIPE PRICES, PAGE 47

Chicago—East Jersey Pipe Corp., New York, is low on 2500 tons of various sizes of steel pipe for Minneapolis. This is in addition to a large order of cast-water pipe awarded recently by that city. Anderson-Pritchard Oil Corp., Oklahoma City, Okla., may be in the market soon for 5000 to 6000 tons of 4 and 6-inch steel pipe. Ft. Wayne, Ind., has an inquiry out for 1000 tons of 4 and 6-inch cast water pipe. Utility orders are negligible. Six to 24-inch cast is quoted $38.40 to $40.40, delivered Chicago.

Boston—Manchester, N. H., has purchased 200 tons of cast. Providence, R. I., placed gate valves with Reading-Pratt & Cady, Boston, at $8466, and hydrants and parts with Chapman Valve Mfg. Co., Indian Orchard, Me., at $12,887. Municipal finances will prevent considerable work going ahead this spring. The Chapman company has also booked gate valves for Panama with a bid of $5765.50.

New York—Bids close this week on 2000 tons for Hawthorne, N. Y., and Feb. 24 on close to 600 tons of 6 and 8-inch for North Creek, N. Y. Smaller-size jobs include a 12-inch line for Central Islip hospital and Thomas Indian school, upstate. United States Pipe & Foundry Co. is low on 20,000 feet of small sizes for Panama. Utilities are not contracting for any sizable amounts. New work at Westchester county has slowed up. Prices continue soft.

Pittsburgh—Demand for standard pipe is restricted by quietness in building operations, while little change also is noted in activity of other tubular products. No early increase in oil well drilling operations is looked for, but the future outlook is move favorable. Line pine inquiry continues quiet.

Cast Pipe Placed

200 tons, 6 to 12-inch, Manchester, N. H., to United States Pipe & Foundry Co., Burlington, N. J.

100 tons, small sizes, Panama, to United States Pipe & Foundry Co., Burlington, N. J.; opening of Jan. 14, schedule 2717.

100 tons, various sizes, for Cathlamet, Wash., and Gooding, Idaho, to Pacific States Cast Pipe Co., Provo, Idaho.

Steel Pipe Placed

600 tons, 48-inch, North Broad street, Philadelphia, to Alco Products Co., Dunkirk, N. Y.

Unstated tonnage, seamless steel tubes, navy, Norfolk, Va., to National Tube Co., Pittsburgh, at $2184.75.

Unstated tonnage, 13,500 feet, 6-inch, Panama, to Youngstown Sheet & Tube Co., Youngstown, O., at $7884; bids Jan. 25, schedule 2718.

Unstated tonnage, 2310 steel boiler tubes, navy, Norfolk, Va., to National Tube Co., Pittsburgh, at $3310.80.

Unstated tonnage, shore pipe, United States, engineer, Wilmington, N. C., to Chicago Bridge & Iron Works, Chicago, at $2141.

Cast Pipe Pending

3675 tons, 6 to 12-inch, class B, Long Beach, Calif.; bids opened.

2000 tons, various sizes, Hawthorne, N. Y.; bids Feb. 19.

1350 tons, 6 and 8-inch, class 150, San Francisco; bids Feb. 11.

1000 tons, 4 to 6-inch, Ft. Wayne, Ind.; bids in.

550 tons, 6 and 8-inch, North Creek, N. Y.; bids Feb. 24. Solomon & Keis, Troy, N. Y., engineers.

350 tons, 20,000 feet, small sizes, navy department, bids for New York, New Orleans and f.o.b. works; United States Pipe & Foundry Co., Burlington, N. J., low.

250 tons, 8-inch, class 150, Sunnyvale, Calif., dirigible base; bids opened.

145 tons, 8 and 12-inch class C, Kenyon street improvement, Seattle; Pacific States Pipe Co., Provo, Utah.

Steel Pipe Pending

9000 tons, water system in connection with Pine Canyon dam project, Pasadena, Calif.; bids will be called for some time during 1932.

4000 to 5000 tons, eight miles of 48-inch pipe for San Diego, Calif.; plans being prepared.

2500 tons, various sizes, Minneapolis; East Jersey Pipe Corp., New York, low bidder.

Unstated tonnage, 8-inch main, extension of gas line from Hebron, N. Y., to Olean, N. Y., for Allengany Gas Co., Olean.

Unstated tonnage, 1500 steel boiler tubes, Panama; Globe Steel Tubes Co., Milwaukee, bid $2925, delivered; Wanderman-Brand Inc., Brooklyn, N. Y., bid $2760, New York.

Unstated tonnage, 5000 feet, 3-inch, wrought iron or galvanized steel standard, and 3500 feet, mostly 2-inch, wrought iron or steel, extra strong, for Panama; bids Feb. 17.

Wire Users Buy Lightly; Prices Hold Without Test

Wire Prices, Page 41

Chicago—Western wire mills, instead of increasing production, are tapering slightly. Recent active specifications have failed to hold up, although February shipping orders are not far below January, except in manufacturers' wire. Quotations of $1.95 to jobbers for wire nails still hold, while 2.25c, Chicago or western mills, is quoted for plain wire. Mill stocks of merchant products have started to pile up. Limitations on credit and inadequate banking facilities in many sections are believed to be the chief cause in the recent decline of farm wire products buying. Higher crop prices, it is indicated, would change the picture within a short time.

A shipment of nails, about 1000 tons, from Germany, is said to have been unloaded here recently.

Worcester, Mass.—Dullness continues in wire, which should ordinarily be pointing toward the first-half peak. Production continues at curtailed schedules. Plain bright wire to dealers remains at 2.30c, base Worcester.

Pittsburgh—Specifications for wire products are light, influenced by the fact that jobbers have added to stocks and distribution requires little additional buying. Prices are steady at $1.95 for carload lots of wire nails, 2.20c for plain wire and $37 for wire rods. Manufacturers' wire is in light and unchanged demand.

Cleveland—Trading is quiet and extremely dull on the basis of $1.95 a keg for nails in carloads and 2.20c for manufacturers wire.

Bolt and Nut Buying Fair; Prices Nominal

Bolts, Nuts, Rivets Prices, Page 41

Pittsburgh — Specifications from leading buyers of bolts, nuts and rivets are in unchanged volume, current activity showing no improvement over the past 30 days. Some betterment in railroad demand is looked for although so far orders are small and represent only actual needs. Prices are quoted 73, 10 and 10 off for bolts and nuts and 2.25c, Pittsburgh, for large rivets, with some weakness noted in bolts and nuts.

Philadelphia—Apart from some ship tonnage, bolt and rivet demand is quiet. Rivets are steady at 2.25c. Pittsburgh, and bolts and nuts 73, 10 and 10 off with an additional 5 in some instances.

Chicago—Heavier specifications in bolts and nuts of the last three weeks have subsided and a mild slump has followed. The 73, 10 and 10 discount for bolts and nuts is nominal. Rivet prices are holding. Farm implement specifications have dropped off.

Raw Material Prices

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago furnace	$16.50
Pittsburgh, dist. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Valley furnace	15.50
Cleveland fur., local del.	16.00
Philadelphia, delivered	15.26 to 15.76
Virginia furnace	17.50
Granite City, Ill., fur.	17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	19.91 to 20.41
Buff., all-rail, Brooklyn	19.40 to 19.90
Buff., all-rail, Newark	17.78 to 18.28
Ala., Bir. fur., local del.	11.00 to 12.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	16.50 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo, fur., local del.	16.50
Buff., all-rail, Brooklyn	19.90 to 20.40
Buffalo, all-rail Newark	18.28 to 18.78
Buff., all-rail, Boston	20.91 to 21.41
Virginia furnace	18.00
Eastern, del. Phila.	15.76 to 16.26

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	16.26 to 16.76

MALLEABLE

Valley furnace	15.50 to 16.00
Cleveland fur., local del.	16.00
Pittsburgh dis. fur.	16.00
Pittsburgh, delivered	16.63 to 17.13
Chicago, furnace	16.50
Buffalo fur., local del.	15.50 to 16.00
Eastern Penna., delivered	17.76 to 19.91
Granite City, Ill., fur.	17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Eastern Penn., del.	15.50 to 16.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	15.00

BESSEMER

Valley furnace	16.00
Pittsburgh, delivered	16.63 to 17.13
Pittsburgh, furnace	16.00

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	15.50
Pittsburgh district fur.	15.50
Pittsburgh, delivered	16.13 to 16.63

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$19; 7—$19.50; 8—$19.00 to $21.00; 9—$20.50; 10—$21; 11—$22; 12—$23; 13—$25.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur. in per cents: 10—$23; 11—$24; 12—$25; 13—$27; 14—$29; 15—$31; 16—$33.

Coke

Prices Per Net Ton

Beehive Ovens

Connellsville furnace	$2.25
Connellsville foundry	3.25 to 4.50
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

By-Product Foundry

Newark, N. J., del.	8.76 to 9.16
Chicago, ovens	7.50
New England, del.	10.50
St. Louis, del.	8.50
Birmingham, ovens	4.50
Indianapolis, del.	8.32
Ashland, Ky., ovens, Connell., basis	5.50
Portsmouth, O., ovens Connell., basis	5.50
Buffalo, ovens	8.00 to 8.50
Detroit, ovens	8.00
Philadelphia, del.	8.75

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%, contract	9.00
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-10% man.	9.50 to 10.00
North African low phos.	8.00 to 9.00
Swedish basic, 65%	8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.50
Newfoundland fdy., 55%	8.00
Tungsten, spot and future short ton unit, duty paid	$11.00
Chrome ore, 48% gross ton c.i.f.	$18.00 to 19.00

Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55% (nom.)	24 cents
South African, 52%	23 to 24 cents
South African, 49-51%	22 to 23 cents
South African, 44-47%	21.00 to 21.50
Indian, 48-50% (nom.)	24 cents
Brazilian, 46-48% (nom.)	20 to 21 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$38.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	38.00
Joliet, Ill., East Chicago, Ind.	47.00
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	$61.50

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$27.00
Pittsburgh, bessemer	27.00
Youngstown	27.00
Cleveland	27.00
Philadelphia	32.75
Chicago	29.00
Forging, Chicago	34.00 to 35.00
Forging, Pittsburgh	33.00 to 34.00
Forging, Philadelphia	38.75 to 39.75

SHEET BARS

Pittsburgh	25.00 to 26.00
Youngstown	25.00 to 26.00
Cleveland	25.00 to 26.00
Chicago	28.00

SLABS

Pittsburgh	27.00
Youngstown	27.00
Cleveland	27.00

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	36.00 to 38.00

SKELP

All grades, Pittsburgh	1.50c

Ferroalloys

(In dollars, except Ferrochrome)

*Ferromanganese, 78-82%, tidewater, duty paid	$75.00
*Ferromanganese, del. Pittsburgh	80.24
Spiegeleisen, 19-20%, domestic fur. spot†	27.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(Spot prices, $5 a ton higher.)	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.10 to 1.20
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis, (18 per cent)	91.00
Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24%	122.50
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molyte, lb. cont.	.80

†Carloads. Differentials apply to quant.
*To users of carloads to 1000 tons annually. Differentials to large users.

Fluorspar

85 and 5 per cent grade

Washed gravel, domes., net ton, del. Pitts. equiv.	$20.31
Washed gravel, import duty paid tide. gross ton	18.50

Pig Iron

Sales Taper, but Shipments Continue Above January Average—Lower Prices on Basic Iron

PIG IRON PRICES, PAGE 49

Pittsburgh—Pig iron business consists almost entirely of small miscellaneous sales following the placing recently of a few moderate orders. Shipments show little change. Prices are unsettled as a result of competition from outside furnaces, lower quotations on basic iron resulting from a recent purchase. This follows similar declines of 50 cents in other grades a week ago. No. 2 foundry, malleable and bessemer are $16, Pittsburgh.

Boston—Second quarter inquiry for pig iron has failed to materialize and current sales are light. The type of buying now prevailing favors truck sales of the local foundry iron at $17 to $18, furnace. The movement of Buffalo iron at $19.50 to $20, delivered, has been light. Sales of imported iron have slowed up, Dutch iron being available at Providence at $17 to $17.50 delivered. A 3000-ton cargo of Royal Dutch has just arrived at Bridgeport, Conn. This is the second cargo to have been received in New England in recent months, the other at Providence, R. I., amounting to about 5000 tons.

New York—Certain large consumers expected in the market this month have not yet appeared. Inquiries generally are for small lots for early shipment, though the volume is larger. Prices on Buffalo iron are unchanged at $14.50 to $15, furnace; eastern Pennsylvania iron is at approximately the same spread, and southern iron is $10, furnace.

An inquiry for 2000 to 3000 tons of foundry iron for a Bayonne, N. J., melter has been withdrawn. The Worthington Pump & Machinery Corp. has placed 150 tons of southern iron for its Cincinnati plant.

Philadelphia—While more interest is manifested in pig iron prices, little buying has developed. An eastern Pennsylvania consumer has withdrawn an inquiry for 10,000 tons of gray forge. Basic is lower at $15.50 to $16, delivered, eastern Pennsylvania. Pennsylvania foundry iron is unchanged at $14.50 to $15, base, furnace.

Cleveland—Sales have dropped for the second consecutive week, after a slight stimulus in the latter part of January. The aggregate for furnace interests with headquarters here in the past week did not exceed 5000 tons. Inquiry also is slower; no important requirements have developed recently. Shipments continue well ahead of last month. The easier price situation in the valley so far has not affected the market here which is $16, base, furnace, for local delivery. For shipment into competitive territories the lake furnace base is $15 to $15.50.

Buffalo—The melt of iron is reported slightly improved, but most consumers have covered early needs and are not in the market. Prices are steady, with $16 the local district base, and $14.50 to $15 quoted for eastern delivery. Furnaces have increased their rate of production.

Youngstown, O.—Deliveries of No. 2 foundry and malleable iron continue to be made in small lots, but new buying is slow. Some standard basic has been sold by producers outside this district at $14.50, furnace, though valley furnaces hold firmly to $15. Standard bessemer is $15.75 to $16.

Cincinnati—Sales during the past week showed a decided reduction from the recent volume. Tonnage inquiries also have disappeared. Shipments continue at an improved rate. Prices are steady here, but influenced largely by Cleveland competition in some parts of this district.

The American Rolling Mill Co. has relighted its blast furnace at Ashland, Ky.

Chicago—Northern merchant sales have made no appreciable gain this month, but shipments will be slightly over January. The shadow of steelworks iron is over the market, particularly iron that has been marketed direct by a South Chicago steelworks in competition with merchant furnaces and middle interests. The market is $16.50 for the base grades, with silicon differentials waived frequently. Southern iron remains at $10, Alabama, furnace, for the base grades, or $16.01, Chicago switching district, without the freight surcharge. Silvery shipments to western Michigan are down slightly.

St. Louis—Pig iron shipments are holding up, but new orders are small. Liberal offerings from all districts have made prices more uncertain, though no definite reductions from quoted levels are noted.

Birmingham, Ala.—Pig iron consumption about equals production. Blast furnace output in January amounted to 9000 tons more than in December, and operations continue as in January. Buyers give indications of better business prospects soon.

Toronto, Ont.—Merchant pig iron sales have improved slightly, amounting to 500 tons for the past week. No bookings are being made for extended delivery.

Ferroalloys Are Steady; Market Fairly Active

Ferroalloy Prices, Page 49

New York—Demand for ferroalloys is fairly active, featured by sales of the silicons. Steadiness of steelworks' operations, even at the low rate, has been a contributing factor for demand. Specifications for ferromanganese and spiegeleisen show further improvement over the recent rate. Ferromanganese is unchanged at $75, duty paid, while domestic spiegeleisen is $27, furnace

Pittsburgh—Lack of improvement in steelmaking operations has restricted ferroalloy shipments. Specifications for ferromanganese and spiegeleisen have remained at unchanged rate for the past several weeks, while buying of special ferroalloys remains slow. Prices are unchanged on small lots of ferromanganese at $75, and on spiegeleisen at $27. Ferrotungsten holds around $1.10

Iron Ore Producers Inclined To Be Firm

Iron Ore Prices, Page 49

Cleveland—The Ford Motor Co.'s inquiry for Lake Superior iron ore which generally appears at this time, usually for 350,000 tons, has not been issued, and producers apparently do not care to expedite it. The latter would prefer that no test of prices be made until May. They are taking a firm view of the situation after unprofitable operations in 1931 and little better prospects for this year. Furthermore, some of the leading consumers do not believe it would help the steel price structure to have iron ore reduced. A few large steel companies have so much ore on hand that they are asking to be relieved from minimum contract obligations this year.

Canada Wire & Cable Co., Montreal, Que., has declared a dividend of $1 per share on class A stock and passed the dividend on class B common.

ADVISED SHARON SPECIFICATIONS

RESULT—Troubles Corrected; Production Savings Added . . .

A Sharon Steel Strip user, manufacturing a recently developed automobile part, was experiencing production troubles, and called on Sharon to help discover the cause. Investigation by a "Sharon Specifications" service engineer disclosed that too high a forging temperature was being used with consequent trouble in stamping operations. ▼ On Sharon's advice, the furnace temperature was lowered. Important advantages followed—stamping trouble was corrected; scale condition on the parts remedied; fuel costs cut about 10%. Thus, product *quality* was improved with a *substantial saving in production costs.* ▼ When Sharon furnishes your strip or sheets, delivery of material is not the end of service. Following through with the customer, to make sure the steel works out to best advantage for the product, is just as important to Sharon as producing finest quality steel strip or sheets. ▼ Such outstanding engineering service can help you with your product problems, and may promote substantial production economies. Just ask for a "Sharon Specifications" representative.

SHARON

SHARON STEEL HOOP CO., SHARON, PA.

Hot and Cold Rolled
Strip Steels
—
Enamelite
Enameling Iron
—
"Nevastain"
Stainless Steels
—
Steel Sheets

Scrap

Quiet Continues and Prices Are Little Changed—Scarcity Developing in Some Grades

Chicago—Weakness continues in steelmaking scrap grades, but relatively high prices are paid for several items that have become scarce. Heavy melting steel is quoted $6.75 to $7.25, a drop of 25 cents from the recent level. Cast borings are the most active grade in the market, due to resumed shipments to one of the local consuming outlets, and continued shipments to the docks for next season's cargoes eastward. As much as $7, net, Chicago switching district, has been offered for brake shoes, which, among other specialties, come out slowly. Releases from industrial and railroad sources, while at a low point, are able to keep pace with the restricted shipments to melters.

Boston—Scrap shipments are light

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	7.00 to 7.50
Boston, dealers	4.00 to 4.50
Buffalo, No. 1	8.00
Buffalo, No. 2	6.25 to 6.50
Chicago	6.75 to 7.25
Cinci., deal.	6.75 to 7.25
Cleve., No. 1	7.25 to 7.75
Cleve., No. 2	7.00 to 7.50
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.75
N. Y. deal. R. R.	4.50 to 5.50
N. Y. deal. No. 2	3.50 to 4.00
N. Y. deal. yd.	3.50 to 4.00
Pitts. No. 1	10.00 to 10.50
St. L. No. 1 sel.	7.00 to 7.50
Federal, Ill.	6.50 to 7.00
Granite City, Ill.	6.00 to 6.50
Valleys, No. 1	8.75 to 9.25

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	5.25 to 5.75
Cleveland	7.00 to 7.25
Detroit, dealers	5.75 to 6.25
E. Pa. new mat.	6.50 to 7.50
Pittsburgh	9.75 to 10.25
Valleys	8.00 to 8.50

BUNDLED SHEETS

Buffalo	5.25 to 5.50
Cinci., deal.	6.00 to 6.50
Cleveland	6.00 to 6.50
Eastern Pa.	5.50 to 6.00
Pittsburgh	9.00 to 9.50
St. Louis	3.50 to 4.00

SHEET CLIPPINGS LOOSE

Chicago	3.50 to 4.00
Cincinnati	3.50 to 4.00
Detroit, dealers	3.00 to 3.75
St. Louis	3.50 to 4.00

STEEL RAILS SHORT

Birmingham	10.00 to 11.00
Boston, dealers	4.25 to 4.75
Buffalo	10.00 to 11.00
Chicago (3 ft.)	9.00 to 9.50
Chicago (2 ft.)	9.50 to 10.00
Cinci., deal.	10.50 to 11.00
Detroit, deal.	10.50 to 11.00
Pitts. (open-hearth, 3 ft. and less)	12.00 to 12.50
St. Louis	11.00 to 11.50

STOVE PLATE

Birmingham	6.50 to 7.00
Boston, con.	4.50 to 5.00
Buffalo	8.00 to 8.50
Chicago, net	5.75 to 6.25
Cinci., deal. net	4.50 to 5.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	7.00
N. Y., deal. mill	4.50 to 5.00
St. Louis	6.50 to 7.00

COUPLERS, SPRINGS

Buffalo	9.75 to 10.25
Chicago	8.50 to 9.00
Eastern Pa.	8.50 to 9.50
Pittsburgh	11.00 to 11.50
St. Louis	8.00 to 8.50

ANGLE BARS—STEEL

Chicago	7.75 to 8.25
St. Louis	7.00 to 7.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	11.00 to 11.50
Cleveland bil. and bloom crops	14.00 to 14.50
Eastern Pa.	12.00
Pittsburgh billet bloom crops	13.00 to 13.50
Pitts., sheet bar crops	13.00 to 13.50

FROGS, SWITCHES

Chicago	6.75 to 7.25
St. Louis	7.50 to 8.00

SHOVELING STEEL

Chicago	6.75 to 7.25
Cleveland	6.25 to 6.50
St. Louis	6.50 to 7.00

RAILROAD WROUGHT

Birmingham	7.00 to 7.50
Boston, dealers	7.00 to 7.50
Buffalo, No. 1	6.25 to 6.50
Buffalo, No. 2	8.00 to 8.25
Chicago, No. 1	7.25 to 7.85
Chicago, No. 2	6.75 to 7.25
Cinci., No. 2	6.50 to 7.00
Eastern Pa.	9.00
N. Y., No. 1, deal.	6.00 to 6.50
Pitts., No. 2	10.00 to 10.50
St. Louis, No. 1	4.50 to 5.00
St. Louis, No. 2	6.50 to 7.00

SPECIFICATION PIPE

Boston	4.00 to 4.25
Eastern Pa.	8.50 to 9.50
N. Y., deal.	5.00 to 5.50

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	5.25 to 5.75
Cinn., No. 1 dl.	4.75 to 5.25
Cinn., No. 2	3.00 to 3.50
Cleve., No. 2	4.25 to 4.50
Det., No. 1 new deal.	4.50 to 5.00
St. L., No. 1	5.00 to 6.50
Val. new No. 1	8.25 to 8.75

MACHINE TURNINGS

Birmingham	3.50 to 4.00
Boston, dealers	1.05 to 1.55
Buffalo	4.75 to 5.00
Chicago	4.25 to 4.75
Cinn., deal.	3.25 to 3.75
Cleveland	4.00 to 4.50
Detroit	3.25 to 3.75
Eastern Pa.	4.00 to 4.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	7.50 to 8.00
St. Louis	2.50 to 3.00
Valleys	6.25 to 6.75

BORINGS AND TURNINGS For Blast Furnace Use

Boston, dealers	1.25 to 1.50
Buffalo	6.00 to 6.25
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
N. Y., deal.	1.35 to 1.50
Pittsburgh	6.50 to 7.00

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.50 to 4.00
Boston, chem.	5.50 to 6.50
Boston, deal.	1.05 to 1.55
Buffalo	5.75 to 6.25
Chicago	4.25 to 4.75
Cinn., deal.	3.25 to 3.75
Cleveland	6.00 to 6.25
Detroit, deal.	4.00 to 4.50
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	10.00 to 11.00
N. Y., deal.	1.50 to 2.00
Pittsburgh	6.50 to 7.00
St. Louis	5.00 to 5.50

PIPE AND FLUES

Cinn., deal.	6.00 to 6.50

RAILROAD GRATE BARS

Buffalo	5.25 to 5.75
Chicago, net	6.25 to 6.75
Cincinnati	4.75 to 5.25
Eastern Pa.	7.00
N. Y., deal.	5.00 to 5.50
St. Louis	5.75 to 6.25

FORGE FLASHINGS

Boston, deal.	5.00 to 5.25
Buffalo	6.25 to 6.50
Cleve. ov. 10 in.	7.00 to 7.50
Detroit	5.00 to 5.50

FORGE SCRAP

Boston, deal.	1.50 to 2.00
Chicago	9.50 to 10.00
Eastern Pa., del.	6.75

ARCH BARS, TRANSOMS

Chicago, net	7.85 to 8.40
St. Louis	6.50 to 7.00

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	6.75 to 7.25
Chi., steelworks	5.75 to 6.25
Cleveland	6.75 to 7.00
Eastern Pa. del.	7.00 to 8.00
Pittsburgh, O. H.	8.75 to 9.25
St. Louis	5.00 to 5.50

STEEL CAR AXLES

Birmingham	11.50 to 12.00
Boston, ship. pt.	11.00 to 11.50
Buffalo	12.00 to 12.50
Chicago	11.75 to 12.30
Eastern Pa.	14.50 to 15.00
St. Louis	11.50 to 12.00

SHAFTING

Bos., ship. pt.	10.00 to 10.50
Chicago	7.85 to 8.40
N. Y., deal.	9.00 to 9.50
St. Louis	8.50 to 9.00
E. Penna.	13.00 to 14.00

CAR WHEELS

Birming. iron	8.50 to 9.00
Boston, iron	11.00 to 12.00
Buffalo, iron	9.25 to 9.75
Buffalo, steel	9.75 to 10.25
Chicago, iron	7.00 to 7.50
Chi., rolled steel	8.50 to 9.00
Cincinnati, iron	9.00 to 9.50
E. Pa. steel	8.50 to 9.00
E. Pa. iron	10.00 to 11.00
Pitts. iron	10.00 to 10.50
Pitts., steel	11.00 to 11.50
St. Louis, iron	7.00 to 7.50
St. Louis, steel	6.50 to 7.00

NO. 1 CAST SCRAP

Birmingham	8.00 to 9.00
Buffalo (Mach.)	9.25 to 9.75
Boston, textile	7.00 to 8.50
Chicago, mach.	8.90 to 9.50
Chi., railroad	7.55 to 8.10
Chicago, agri.	7.00 to 7.55
Cinn., mach. cup., gross	10.00 to 10.50
Cleve. cupola	10.00 to 10.50
Det., net deal.	8.00 to 8.50
E. Pa. cupola	10.00 to 11.00
N. Y. cup. deal.	7.00 to 7.50
N. Y., del. local foundries	11.00
Pitts., cupola	10.00 to 10.50
San Fran., del.	13.50 to 14.00
Seattle	5.00 to 7.50
St. L. No. 1 ma.	7.00 to 7.50
St. L., No. 1	6.50 to 7.00

HEAVY CAST

Boston	6.00 to 6.50
Bost. mach. cast	8.00 to 9.00
Buffalo, break	5.50 to 6.00
Cleve., break	6.00 to 6.50
Detroit, auto, net deal.	10.00 to 10.50
Det., break., dl.	4.75 to 5.25
Eastern Pa.	9.00
N. Y. break, dl.	5.75 to 6.00
N. Y. No. 1 dl.	7.00 to 7.50
Pittsburgh	8.00 to 8.50

MALLEABLE

Boston R. R.	8.50 to 9.00
Buffalo	9.50 to 10.00
Chicago, agri.	6.50 to 7.00
Chicago, R. R.	7.00 to 7.50
Cinci., R. R. del.	8.75 to 9.25
Cinci., agri. del.	8.50 to 9.00
Cleveland, rail	10.00 to 10.50
Det. auto deal.	9.00 to 9.50
St. Louis, rail	5.50 to 6.00

RAILS FOR ROLLING 5 feet and over

Birmingham	9.50 to 11.25
Boston, deal.	6.00 to 7.00
Buffalo	8.50 to 9.00
Chicago	10.00 to 10.50
Eastern Pa.	10.00 to 10.50
New York	6.25 to 6.75
St. Louis	9.00 to 9.50

LOCOMOTIVE TIRES

Chicago, cut	8.00 to 8.50
St. L., No. 1	8.00 to 8.50

LOW PHOS. PUNCHINGS

Chicago	9.50 to 10.00
Buffalo	10.00 to 11.00
Eastern Pa.	11.00
Pittsburgh	11.00 to 11.50

The dollar you **spend** *now is worth* $1.50

The dollar you **save** *now is worth* 75c

A LOT of people feel just now like the old Negro who came to the crossroads and saw one sign pointing to heaven and another sign pointing to hell. He shook his head and said to himself, "Ef Ah goes to Hebben, gotta fly all the while; ef Ah goes to Hell gotta jump all the while. Ah giss Ah'll jes' set here an' rest mahse'f."

BUT resting is rusting. This is true of dollars.

IF those of us who *have* money just *leave* it to *rest*—the wheels of industry keep on rusting. Wheat and cotton and corn keep on piling up in warehouses. Our neighbors keep on hunting for jobs that don't exist.

Now, it's wrong to spend our dollars foolishly, just for the sake of spending. But a lot of us are *saving* dollars foolishly—just for the sake of saving—without realizing that the dollar we save today has a decreased *earning* power compared with the dollar we saved in 1929. But the dollar we *spend* today is worth $1.50 in value received.

MOST prices are way down—further down than they were even in 1921. Eggs and butter and flour and clothing and furniture are way down—and that means values are way *up*. This is the greatest *buying* time we'll see again for many years.

PRETTY soon, these prices are going to start up—some prices have already started up. When they do, we'll have to pay *more* for the things we need *right now*. We shall have lost the chance to get that new suit or dress or chair or bed or radio or automobile—at a bargain!

BESIDES, if we buy these things *now*, we'll put somebody to work who needs a job even worse than he needs charity. If we put him to work, he can buy the things *we* make or sell, and that will help *us*.

HARD times? Not if we harness our dollars and hitch them to the wagon, instead of leaving them in the stable.

THE NATIONAL PUBLISHERS' ASSOCIATION

"To use available income to purchase goods normally needed and in the replacement of which labor is employed, is a condition precedent to any hopeful program to constructively increase employment."

From the Recommendations of the Committee on Unemployment Plans and Suggestions, of the President's Organization on Unemployment Relief.

and prices on several grades are easy, although current volume is giving little test. No. 1 steel to Central Massachusetts is nominally unchanged at $6.50, delivered. Foundries have little business and are confining activity largely to small lots of machinery scrap. Chemical borings are easier and No. 2 steel for outside shipment fails to bring bids much better than $3.15, shipping point.

New York—All grades of scrap are quiet, shipments being limited to a few cars under pressure. Buying of No. 1 and 2 steel for barge storage has also declined. Prices are generally unchanged with some nominal, especially skeleton scrap of which there is practically no buying. Scrap sales are to be held Feb. 18 at Camp Dix and Fort Wadsworth.

Canadian Scrap

Dealers' Buying Prices

Per Gross Ton

MONTREAL

Iron axles	$11.00
Steel axles	10.00
Car wheels	8.00
Stove plate	8.00
Wrought pipe	2.00
Turnings	2.00
Heavy melting steel	6.00

TORONTO

Steel axles	7.00
Iron axles	7.00
Heavy melting steel	7.00
Turnings	2.00
No. 1 mach. cast (net)	9.00
Malleable (net)	7.00

Buffalo—Scrap demand is slow and shipments have not improved in spite of increase in open-hearth operations. Dealers report small sales of cast and stove plate, but no new buying of heavy melting steel. Prices are largely nominal.

Pittsburgh—Iron and steel scrap is quiet particularly in the heavier steelmaking grades as a result of continued low open-hearth operations. No new buying of heavy melting steel has appeared here and compressed sheets also are dull, following a recent sale at $10.25. Steel turnings are more active, following an extended period of quiet during which quotations were nominal. A recent sale of machine shop turnings of special analysis has been followed by one at $8 calling for standard material. This represents an advance of $1 over the former market. Sales of other grades are limited to small lots.

Cleveland—New orders in iron and steel scrap are largely confined to small lots. Movement to consumers is practically at a minimum since most contracts have been practically filled. Scarcity of choice heavy melting steel is becoming apparent, dealers being apprehensive that an actual shortage may develop. Quotations continue unchanged.

Detroit—In spite of the fact that much pending inquiry is slow closing, the steel scrap market is strong. Demand is anticipated from valley and Pittsburgh consuming points in plans already under way for opening of Lake Erie shipments to Buffalo, Cleveland and other ports, which will be earlier than usual this year. Quoted prices are unchanged.

Cincinnati—Shipments and buying, chiefly in blast furnace scrap and No. 2 steel, are light. Quotations reflect adjustments in some grades in accord with trading prices recently, but prices are considered no weaker.

St. Louis—Trading in iron and steel scrap is dull. Prices are unchanged. The only sale worthy of note was 300 tons of steel to an East Side mill for delivery during first quarter. The same interest is in the market for an additional 1700 tons, on which it is likely to close during the next few days.

Philadelphia—Some movement of steel scrap to Japan is noted on the eastern seaboard but no particular increase over the rate of recent months. A stiffening of prices is indicated on these shipments. Domestic buying is negligible. The Pencoyd, Pa., consumer has withdrawn and other consumers continue the ban on shipments. Prices are nominally unchanged.

Birmingham, Ala—Melters of pig iron are using old material but are buying in as small lots as possible. Larger consumers of heavy melting steel have fair stocks. Prices are unchanged.

Toronto, Ont.—New developments are absent from the steel and iron scrap market. Small sales of steel grades are being made in the Montreal district for export, but there is little demand for domestic consumption. Local dealers report no demand for heavy melting steel and turnings. Current demand is mostly for iron grades with a steady movement in machinery cast and some booking in wrought scrap. Prices are unchanged.

Big Four railroad reopened its locomotive shops at Beech Grove (Indianapolis) Ind., Feb. 15 with a full force of 1200 men.

Coke

Business in Light Volume in All Grades—Connellsville Market Quiet—Prices Are Steady

COKE PRICES, PAGE 49

Pittsburgh—Beehive coke sales are in unchanged volume, no improvement being noted in demand for metallurgical requirements, while heating fuel activity again has moderated. Furnace coke holds around $2.25 in the spot market, with foundry grades unchanged at $3.25 to $4.50.

New York—Sales of metallurgical coke are light. Prices of beehive coke are at about the same range as has prevailed for the last two or three weeks, beehive furnace at $2, Connellsville; and beehive foundry, at $3 to $3.25, Connellsville, for the common grades, and $4.50, Latrobe, Pa., for premium brands. By-product foundry coke is $8.76 to $9.16, delivered Newark, N. J.; $10.50, New England; and $8.75, Philadelphia.

Cincinnati—Slight improvement is noted in demand for by-product foundry coke. Buying is limited to immediate needs.

St. Louis—Coke demand continues slow. Stocks at by-product producers' yards are large, particularly industrial grades. Prices are unchanged.

Birmingham, Ala.—Less than half the by-product coke ovens in the Birmingham district are operating. The market shows little change in demand or prices.

Railroad Income, Outgo

Final statistics for 1930, the latest available, show operating receipts of American railroads totaled $5,281,196,870, of which $4,083,241,558 was for freight transportation and $729,471,420 was passenger revenue. Important expenditures were $2,366,563,066 for salaries and wages, $952,461,141 for materials and supplies, $282,886,293 for locomotive fuel, $348,553,953 for taxes.

Pacific Coast

California Building Delayed by Rains—Chrysler Plant Brings Out Some Tonnage — Most Awards Are Small Lots—Both Seattle Mills Closed, Awaiting Orders—Pipe Comes Out Slowly

Seattle—Only unimportant awards were noted in the Pacific Northwest this week but considerable tonnages are up for immediate decision. New projects are slow in materializing. Prices are holding and the trade cannot visualize further concessions.

Bars, Plates and Shapes

Mill prices are quite steady, merchant bars and shapes, 2.00c, plates 1.80c, while reinforcing material is 2.30c.

Both local steel mills are closed until new business is booked, Pacific Coast Steel Corp. having operated both open hearths and rolling mill in January. Demand for concrete reinforcing steel is limited and no important jobs have developed. Awards totaling 415 tons were made last week. Evans, Coleman & Evans, Vancouver, B. C., will furnish 300 tons of reinforcing bars for the First Narrows water tunnel, concrete pipe to be supplied by Pressure Pipe Co. of Canada, 1605 Royal Bank building, Vancouver. Pacific Coast Steel Corp., Seattle, has contracts to furnish 115 tons for Wenatchee, Wash., bridge piers and veterans' hospital buildings at Walla Walla, Wash. The largest tonnage pending involves 746 tons for the Seattle University bridge, general contract awarded.

Demand for plates is small, 100 tons pending in an irrigation job in Chelan county, Wash., bids in. Hancock Oil Co. has had plans prepared for a 6400-barrel oil storage tank at Seattle.

Finished Materials

Wholesalers are struggling against buying apathy which has been more acute since the holidays. Business is uniformly in small lots. There is practically no mill buying. No item is in good demand, light plates and sheets moving only in restricted tonnages. Local jobbers appear to be holding firm to recently established price minimums.

Pipe Demand Is Slow

Municipal specifications for cast iron pipe requirements are being held back. Both awards and inquiry are below those of the corresponding period last year. There is no industrial demand at present. Pacific States Cast Iron Pipe Co., Provo, Utah, booked a total of 100 tons this week for Cathlamet, Wash., and Gooding, Idaho. The same firm is low for 145 tons of 8 and 12-inch cast iron for the Kenyon street, Seattle, project, bids in. Kittitas, Wash., will vote Feb. 15 on a water system project calling for 10,400 feet of 4 and 6-inch cast iron pipe. Anacortes, Wash., has decided to buy 2500 feet of 8-inch water pipe.

Old Materials

With local steel mills down and foundry activity at a minimum, there is practically no movement of either steel or cast iron scrap. Dealers are not buying, as stocks are heavy. Shippers find no market even at today's record low prices. Foreign buyers are absent. Seattle opened bids Feb. 15 for the sale of 110 tons of scrap steel rails.

Coast Pig Iron Prices

Utah basic	$22.00 to 24.00
Utah foundry	22.00 to 24.00
*German	24.25
*Indian	22.00 to 24.00

*C.i.f. duty paid.

Buying Fails To Gain

Los Angeles—(*By Air Mail*)—Construction activity throughout California has been held up, due to excessive rains and as a result few awards were reported. The most important letting involved 400 tons of structural shapes for the new Chrysler plant in Los Angeles, placed with McClintic-Marshall Corp. Among the larger projects recently developed are 9000 tons of plates for a water system in connection with the Pine Canyon dam project for Pasadena. Bids are not expected to be called for this portion of the work, however, until after June. San Diego is also preparing plans for a pipe line, eight miles of 48-inch pipe. Approximately 4000 to 5000 tons of plates will be required.

Awards of reinforcing steel bars were not numerous and aggregate less than 300 tons. The largest letting called for 100 tons for the new Chrysler plant in Los Angeles, placed with an unnamed interest. Bids were opened this week on 148 tons for highway work in Oregon; on 150 tons for a building for the University of California at Los Angeles and on 100 tons for a teachers' college building at Fresno, Calif. Out-of-stock prices in this district continue weak at 1.90c, base, on carload lots. San Francisco quotations hold around 2.50c, base. Little of importance has transpired lately in this market for merchant bar steel, sales and inquiries involving relatively small lots only.

No plate awards of size were reported. Bids have been opened on 510 tons for helium tanks for the dirigible base at Sunnyvale, Calif. Los Angeles will open bids Feb. 18 for 300 tons for a penstock. Bids will be taken on hammerwelded, electric welded and riveted steel pipe. Little change is noted in price, 1.80c to 1.85c, c.i.f., being general.

While a number of small structural steel awards were placed during the week, only one award in excess of 100 tons was reported. The McClintic-Marshall Corp. took 400 tons for the new Chrysler plant in Los Angeles. Plain standard shapes continue to hold at 2.05c, c.i.f., while wide flange material is quoted at 2.15c.

Other Finished Material

Awards of cast iron pipe were confined to lots of less than 100 tons. Long Beach, Calif., has just opened bids on 3675 tons of 6 to 12-inch pipe.

Suspends Lower Pipe Rates

Washington—Interstate commerce commission has suspended until Sept. 8 the operation of certain railroad schedules proposing to reduce carload rates in cast iron pipe from southern producing points to Virginia, South Atlantic and Gulf ports, when such pipe is to be reshipped via coast wise vessels to North Atlantic points. A typical proposed reduction was from $8.60 to $5.60 from Birmingham, Ala., to Norfolk, Va.

Caterpillar Tractor Co., Peoria, Ill., closed 1931 with cash of nearly $10,000,000, a new high record, it is reported, following the December payment by Russia of $500,000, representing the final settlement on 1931 tractor deliveries. Caterpillar 1931 earnings are estimated at about $1 a share, and sales between $25,000,000 and $26,000,000.

Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.75c, Conn., for copper

Sheets	
Yellow brass (high)	12.87½
Copper, hot rolled	15.87½
Lead sheets, to jobbers	6.75
Zinc sheet (100-lb. base)	9.00
Tubes and Pipes	
Seamless yellow brass (high)	16.12½
Seamless copper	15.37½
Rods	
Yellow brass (high, full turnings)	10.62½
Naval brass	11.75
Anodes	
Copper untrimmed	12.75
Wire	
Yellow brass (high)	12.87½

Old Metals

Dealers' buying prices, cents lb. No. 1 Composition Red Brass

New York	4.00 to 4.25
Chicago	2.75 to 3.00
Cleveland	3.50 to 3.75
St. Louis	**3.50**
Heavy Yellow Brass	
New York	2.50 to 2.75
Heavy Copper and Wire	
New York	5.00 to 5.25
Boston	4.50 to 4.75
Chicago	3.00 to 3.50
Cleveland	3.50 to 4.00
St. Louis	**3.75**
Composition Brass Borings	
New York	3.75 to 4.00
Yellow Brass Tubing	
Cleveland	2.25 to 2.50
Light Copper	
New York	4.00 to 4.25
Chicago	2.50 to 2.75
Cleveland	3.00 to 3.50
St. Louis	**3.50**
Light Brass	
Boston	1.65 to 1.85
Chicago	1.50 to 1.75
Cleveland	1.50 to 1.75
St. Louis	**2.00**
Lead	
St. Louis	2.50
Zinc	
New York	**1.00 to 1.25**
Cleveland	**1.00 to 1.25**
St. Louis	1.25
Aluminum	
Clippings, new, soft, Cleve.	**11.00 to 11.50**
Clippings, hard, Cleveland	**7.50 to 8.50**
Borings, Cleveland	2.75 to 3.25
Mixed cast, Cleveland	4.00 to 4.25
Mixed cast, Boston	3.25 to 3.50
Mixed cast, St. Louis	**3.50 to 4.00**

Secondary Metals

Remelt, aluminum No. 12	8.50 to 9.00
Brass ingots, 85-5-5-5	6.37½

Metals

Copper Falls to New Low of 6.00c, Connecticut — Zinc Is Easier but Lead Holds

New York—Copper prices fell to new low ground last week, while zinc eased off after a slight bulge. Lead, nickel and aluminum held steady, however, although tin prices fluctuated with changes in sterling exchange and the market abroad.

Copper—Sales pressure brought the custom smelter price on electrolytic copper down to 6.00c, delivered Connecticut. Mine producers, however, continued to hold to 6.75c during the week with copper and brass products and copper wire all quoted on this basis. Brass ingot fell ½-cent with 85-5-5-5 mixture available at 6.37½c, refinery. Custom smelters offered copper for delivery abroad at the new low price of 6.12½c, c.i.f. European ports. Sales at this level increased considerably. Domestic consumers continued to show little interest in the market.

Lead—Sales were in smaller volume last week with bookings confined to scattered carlots for prompt and February delivery. Only a small amount of March business has been done. About 7000 tons still are to be purchased for February needs. Quotations last week were generally steady although some distress metal was available in the Midwest at shaded prices.

Zinc — Quotations strengthened early in the week with the advance of $1 a ton in Tri-State ore but later eased off with continuance of poor demand and sales pressure by sellers. Fair sales of high-grade zinc were reported.

Tin—Business continued light during the week with exception of fair sales Wednesday. Quotations were mostly under importer's costs and on some days largely nominal. Tin plate production fell to 90,000 tons last month, against 103,000 tons in the preceding month.

Antimony—Prices eased off last week following the sharp advance in the preceding week due to Chinese disturbances.

Aluminum—Sales were small with prices holding to unchanged levels.

Distillate Prices Steady, With Production Reduced

New York—Low production holds distillate prices steady, but demand is light. Lacquer manufacturers, while more active than some months ago, still are buying below the normal seasonal rate. Phenol volume is fair, although contracting is not heavy, the bulk of business being for spot needs at 17.00c. Naphthalene shipments against contracts are satisfactory, with little spot business. Sulphate of ammonia is slow and prices easy.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants in	
Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75
Per 100 Pounds Atlantic Seaboard	
Sulphate of ammonia	$1.10 to $1.20

Quicksilver Firmer

New York—Quicksilver prices are slightly firmer, with spot virgin flasks of 76 pounds $66 to $67. Inquiries have increased somewhat and some business has been done as low as $65. It is estimated mine output has been cut to about 7000 to 8000 flasks a year, considerably under the usual annual production.

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin New York Spot	Straits Tin New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
February 6	6.25	6.62½	6.00	21.87½	22.40	3.75	3.55	2.80	22.90	6.75	35.00
February 8	6.25	6.62½	6.00	21.75	22.25	3.75	3.55	2.85	22.90	6.75	35.00
February 9	6.00	6.62½	5.75	21.70	22.20	3.75	3.55	2.82½	22.90	6.75	35.00
February 10	6.00	6.37½	5.75	21.40	21.95	3.75	3.55	2.80	22.90	6.62½	35.00
February 11	6.00	6.37½	5.75	21.75	22.25	3.75	3.55	2.80	22.90	6.37½	35.00
February 12—Holiday											

Many Tests

. . . are made

before the metal is poured

The wherefore of the Quality and Uniformity of Wissco Wire is no secret. It starts with the careful selection of ore and continues with thoroughly planned production directions based on scientific information and research. Each successive step in the manufacture of metal, drawing of wire, heat treating and finishing is checked by chemical, physical, micro-photographic examinations of samples taken from work in process. With such planning and control, Wissco Wire cannot be other than of highest Quality and Uniformity.

Wickwire Spencer Steel Company, 41 East 42nd Street, New York City
Buffalo • Chicago • Detroit • Philadelphia • Tulsa • Worcester; *Pacific Coast Headquarters*: San Francisco; *Branches and Warehouses*: Los Angeles • Portland • Seattle. *Export Sales Department*: New York City

WISSCO WIRE
by Wickwire Spencer

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft, or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wires—Valve Spring—Music—Clip—Pin—Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Machinery Spring Wire—Reed Wire—Clock—Pinion—Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

Europe

British Tariff Believed Too Low for Real Protection—Output Holds at Steady Rate

London—(*By Radio*)—Imposition of the 10 per cent tariff on steel and iron products brings hope to British producers but this rate is not considered sufficient protection against foreign steel. Meanwhile, the market shows little activity. Dorman Long has closed a contract for a bridge in Scotland.

Pig iron again is going into stock as consumption is insufficient to absorb present production. Some pig iron is being shipped from the Barrow district to the United States. Exports of tin plate to Canada and the Far East are improving. Galvanized sheets are weakening.

January production of pig iron was 330,000 tons, from 76 furnaces, a daily average of 10,645 tons, compared with production of 330,600 tons from 70 furnaces and a daily average of 10,664 tons in December. Production of steel ingots and castings in January was 430,000 tons, a daily average of 13,871 tons, compared with 422,400 tons in December, and daily average of 13,626 tons. Pig iron exports from Middlesbrough are estimated at 3945 tons.

Reports from Paris state that trade is slowing after a recent active period, competition of Belgian mills having an adverse effect. Little change is reported in the German steel situation. Reports from Brussels state that Japan is buying steel bars, with German mills competing strongly for this business.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Feb. 11

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports	£ s d	Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	£ s d L s d
PIG IRON				
Foundry, 2.50-3.00 Silicon	$10.06	2 18 6	$ 9.96 to $10.45	2 1 0 to 2 3 0
Basic bessemer	9.63	2 16 0*	9.48 to 9.72	1 19 0 to 2 0 0
Hematite, Phos. .03-.05	14.30	3 5 0	.....	.....
SEMIFINISHED STEEL				
Billets	$18.49	5 7 6	$11.66 to $11.91	2 8 0 to 2 9 0
Wire rods, No. 5 gage	29.24	8 10 0	24.30 to 25.52	5 0 0 to 5 5 0
FINISHED STEEL				
Standard rails	$28.38	8 5 0	$28.55	5 17 6
Merchant bars	1.08c	7 0 0	.58c to .59c	2 15 0 to 2 14 0
Structural shapes	1.19c	7 15 0	.56c to .57c	2 11 0 to 2 12 0
Plates, †¼ in. or 5 mm.	1.34c	8 15 0	.70c to .72c	3 4 0 to 3 5 0
Sheets, black, 24 gage or 0.5 mm.	1.34c	8 15 0	1.46c to 1.49c	6 12 6 to 6 15 0
Sheets, gal., 24 gage, corr.	1.42c	9 5 0	1.54c	7 0 0
Bands and strips	1.46c	9 10 0	.80c to .83c	3 12 6 to 3 15 0
Plain wire, base	1.31c	8 10 0	1.18c	5 7 6
Galvanized wire, base	1.69c	11 0 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.69c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.49	0 14 6	$3.20	0 13 2‡

British ferromanganese $72 to $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks	
Fdy. pig iron, Si. 2.5	$10.06	2 18 6	$ 9.46	240	$10.32	370	$17.02	69
Basic bessemer pig iron	9.63	2 16 0*	.....	.....	9.21	330	17.97	75.50
Furnace coke	2.15	0 12 6	5.71	145	4.46	160	5.09	21.40
Billets	18.49	5 7 6	13.00	330	12.00	430	23.68	99.50
Standard rails	1.27c	8 5 0	1.41c	785	1.57c	1,210	1.37c	127
Merchant bars	1.08c	7 0 0	.90c	500	.66c	510	1.24c	115
Structural shapes	1.34c	8 15 0	.99c	550	.65c	500	1.22c	112.50
Plates, †¼-in. or 5 mm.	1.39c	9 0 0	1.17c	650	.77c	595	1.43c	132
Sheets, black, 24 ga. or .05 mm.	1.34c	8 15 0§	1.33c	740‡	.88c	675‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	1.42c	9 5 0	2.43c	1,350	2.20c	1,690	4.00	370
Plain wire	1.31c	8 10 0	1.75c	970	1.95c	1,500	1.92c	178
Bands and strips	1.46c	9 10 0	.96c	535	.98c	750	1.44c	133

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel, Continental usually for basic-bessemer steel.

French Steel Industry Puts Faith in Comptoirs

Paris—Little change is reported in the French iron and steel market, in sales and production. There has, however, been a slight expansion in the volume of inquiries, probably due to the impending formation of new selling syndicates. In addition to reorganizing the semifinished steel comptoir, it is intended to widen the scope of the plate syndicate to include the various categories of sheets. A separate syndicate for tin plate was expected to be in operation Feb. 1.

It is also intended to constitute a syndicate for hoops and bands, but there are considerable difficulties in this connection. It is reported that the recently-formed wire products syndicate is not working satisfactorily, owing to the actions of one of its members. This general tendency among manufacturers of steel products to establish comptoirs or syndicates to control prices, and in some cases to control sales, tends to indicate that eventually pig iron producers will also come to some agreement. Foundry pig iron, 2.5 to 3 per cent silicon, is now sold at less than 250 francs ($9.75), and hematite pig iron at 393 francs ($15.35).

There has been a slight revival in the semifinished steel market. Two-inch billets are quoted at 280 to 300 francs ($10.95 and $11.70), and second-grade billets are 220 francs ($8.60). French manufacturers of merchant bars are still feeling the effects of keen competition at lower prices on the part of the Belgians, with the result that French makers are authorized by the merchant bar syndicate to reduce prices to meet that competition. This, however, disorganizes the market. A few Saar mills are also offering bars on the French market at prices lower than those fixed by the comptoir.

Belgian Market Uncertain; Some Trade Persists

Brussels — Complete uncertainty again prevails in the Belgian iron and steel market. It is felt that the slight revival in January was the result of an atmosphere of confidence created by the governments and the press. The last meeting of the iron and steel exchange in Brussels in January was not so satisfactory as its predecessors. While German competition was not so intense, the volume of orders was considerably less than during recent weeks. There

is little change in price. Merchant bars fluctuate around £2 14s, gold, ($13.05) per metric ton f.o.b. Antwerp; certain works accept £2 13s 6d and even £2 13s ($12.80).

Substantial orders have been placed for merchant bars and structural steel by French jobbers. On the other hand, French works are endeavoring to obtain orders for structural steel, but only small tonnages are obtainable for export.

Beams are quoted at £2 10s ($12.10) for normal sizes and £2 11s ($12.15) for British sections. There has been no change in quotations for semifinished steel, and practically no business has been passed.

In the plate and sheet market, 5-millimeter plates are quoted at 600 Belgian francs ($16.70). For export, sheets 1/8-inch are quoted at £4 2s, paper, ($14) and 3/16-inch at £3 4s ($11), while galvanized corrugated sheets, 23-gage, are quoted at £9 7s 6d, paper, ($32).

December Lowest Month in Germany's 1931 Production

Berlin—A considerable drop in production of iron and steel was registered in Germany in 1931. The output of pig iron was 6,063,048 metric tons, compared with 9,694,509 tons in 1930, a decrease of 37.5 per cent. The 1931 output was composed of 4,075,494 tons of basic bessemer, 1,163,804 tons of ferro-alloys, 432,249 tons of hematite, 364,760 tons of foundry, 21,775 tons of forge pig iron, and 4966 tons of direct castings.

Output of steel ingots and castings in 1931 was 8,291,250 metric tons, against 11,538,582 tons in 1930, a decrease of 28 per cent. The 1931 output of raw steel included 8,122,362 tons of ingots and 168,888 tons of steel castings, the production of steel castings in 1930 being 230,188 tons.

Steel Industry in Europe Sinks to Prewar Measure

AT THE end of 1931 the European export price of merchant bars was only 50 cents above the price at which foundry pig iron was sold at the beginning of the year and basic bessemer plates could be obtained cheaper than the price at which 2-inch billets were sold in January.

Not only have steel prices moved to low levels, but output also has sunk to a level about even with nine years ago. The average monthly steel production at the end of the year was on a level with prewar times, when many uses of steel which are now taken as a matter of course were barely appreciated. Practically without exception steel production of Continental countries during the last months of 1931 was falling steadily. Great Britain was an exception and began to show an upward tendency, owing to the slight impetus given by the depreciation of the pound sterling.

In Great Britain the output of steel during 11 months of the year was 4,753,200 gross tons, against 6,961,300 tons in the corresponding period of 1930, a decrease of 31.7 per cent. Output in October and November, however, had exceeded that of any previous months since March, August being the lowest month with 357,300 tons. Where Britain suffered most was in her export trade. From Jan. 1 to Nov. 30 British exports of iron and steel were only 1,805,361 tons against 2,988,381 tons for 1930 and 4,047,428 tons for 1929, showing a reduction of 39.8 per cent and 55.5 per cent respectively. Imports of iron and steel during the first 11 months of 1931 were 2,585,057 tons, in excess of exports by 30.2 per cent.

It is pointed out that not only for the first time have imports exceeded exports by a substantial margin, but in relation to national production they have reached a high percentage. It should be noted, however, that, in fact, imports in the first 11 months of 1931 were actually 40,000 tons less than in the corresponding period of 1930 and it was only in October and November that they showed a substantial increase, owing to the effect on Continental producers of the announcement that a tariff would eventually be applied.

A year ago, France still was considered prosperous, and her steel output for 1930 was nearly equivalent to that of the record year 1929. At present French steelworks are working part time. A considerable number of furnaces have been blown out, workers have been dismissed in numbers, and orders are often taken at a loss in order to keep the works at least partly in operation.

In the first 11 months of 1931 the French output of steel was 7,274,000 metric tons, against 8,646,000 tons in the corresponding period of 1930, a decrease of 15.9 per cent. Output in November dropped to 538,000 tons, a reduction of 14 per cent from the October tonnage, which was already low for the year. Exports of iron and steel from France, on the other hand, decreased during the period under review only by about 3.5 per cent. France still enjoys a fairly active domestic market, and producers are looking forward to materialization of the national equipment scheme to keep their works going to some extent.

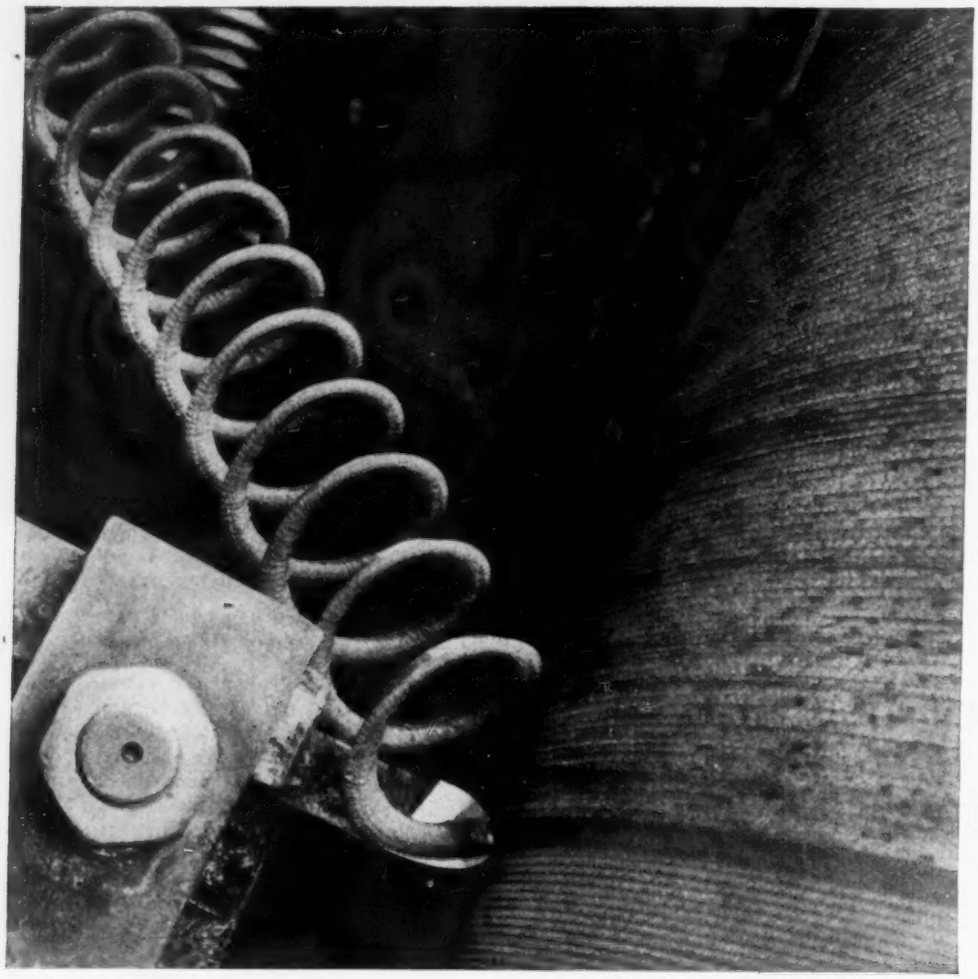
Problems and outlook of the steel industry in Europe are set forth in the accompanying quarterly review by Vincent Delport, London, European manager of STEEL, a composite of the observations of this publication's corps of market observers in Great Britain and the Continent.

Germany Hardest Hit

It is no cause for astonishment that Germany should be among the most badly hit nations in Europe in her steel and heavy industries. The fact that the German steel output in November was only slightly above that of France illustrates the plight of the German works, especially when it is remembered that in 1929, the record year for both countries, Germany's monthly average output was 1,354,000 tons, or 57 per cent more than that of France.

For the first 11 months of 1931 Germany produced 7,854,246 metric tons of steel, compared with 10,794,903 tons in the corresponding period of 1930, a decrease of 27.3 per cent. Only 47 blast furnaces were blowing on Nov. 30 out of a total of 155. While Germany's iron and steel exports during the first ten months were only 7.3 per cent less than in the corresponding period of 1930, the greater portion taken at uneconomic prices, these export sales did help to keep the works going.

From the point of view of production, Belgium and Luxemburg have not been so badly hit as other countries, the decrease for the first eleven months of 1931, compared with the corresponding period of 1930, being 7.6 per cent and 9.7 per cent respectively, while exports of the Belgo-Luxemburg union dropped by 10.5 per cent. At the end of the year Belgian steelworks were operating at 65 to 70 per cent of capacity, and those of Luxemburg at about 60 per cent. However, both these countries felt the effect of trade depression keenly, because most of their production is exported, and prices on world markets were not sufficiently high to return adequate profit. Every other producing country in Europe suffered in a way similar to that depicted for the larger nations.



¾-inch cut, ⅛-inch feed, 35-foot c. s.

MIDVALE

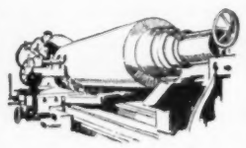
IS A DOCTOR WHO TAKES HIS OWN MEDICINE

In fact, Midvale Tool Steel was first made and is still made today because in the Midvale shops are met tool steel requirements of a more severe nature than in probably any other shops in the country. From giant chips on large pressure vessels to the finest machining on delicate and intricate equipment—even to the point of cutting locomotive tire blanks from ingots that are actually tool steel themselves—you will find Midvale Tool Steel doing its job. Consequently, Midvale Tool Steel must be the best we can get—and it is. The same problem of continuous production and of economical production that faces us, confronts you.

Your Tool Steel is just as important to you as Midvale's is to Midvale. Perhaps our experience would help you—call The Midvale Company at any of our offices,—Philadelphia, New York, Pittsburgh, Washington, Cleveland, Chicago, San Francisco.

TOOL STEEL

Midvale does not follow the "tonnage" method of tool steel production. Midvale charges with cold metal. Lets the ingots cool, to permit inspection for faults. Carefully chips out any cracks. Reheats ingots and reduces to billet size. Sand-blasts the scale. Again inspects and chips when necessary. Reheats and rolls to finished size. This is the only method by which tool steel of Midvale quality can be produced.



HEAVY MACHINING

To meet the requirements of Midvale shop operation, Midvale tool steel is tested under the most exacting conditions any steel can be asked to meet. Gigantic pressure vessels, heavy ordnance of the toughest metal, locomotive tires whose composition is actually that of tool steel itself—steel of every variety of alloy, work from heavy roughing to that calipered to the ten-thousandth of an inch—all this is daily going through the Midvale shops—*and must go through on schedule.*

Machinery

ALMOST at the moment when this summary was prepared, there occurred a sudden improvement in sentiment in the industrial machinery business. This change, which has come about after a rather gloomy week, has been due; first, to easing of the financial situation through moves in Washington toward broadening the functions of the Federal Reserve system; and second, to definite statements as to the new Ford automobiles, the sales plan behind them and tentative production schedules. Important releases, both of automotive parts and manufacturing equipment, are momentarily expected. Chicago reports some orders.

New York—Activity in machine tools shows little improvement. A few inquiries are out for one or two tools, but nothing in the way of a general gain in orders appears ahead. Some eastern builders are more active on orders taken recently, but as a rule operating schedules are curtailed.

Government bureaus in some cases continue to be rather active in the purchase of industrial equipment. Navy department will close bids on Feb. 23, covering four turret lathes for Puget Sound and four for Mare Island. On the same date bids will also be closed on a universal grinder and a vertical drilling machine for Mare Island. Bureau of standards closes bids on Feb. 25 for two 5-ton cranes for national hydraulic laboratory.

Worcester, Mass.—The machinery and plant equipment market holds no promise, either in orders or inquiry. There now is little expectation that February business will equal even the unsatisfactory January level.

Railroads already were out of the market, but to make matters worse, automobile interests mark time.

Among scattering orders appears one for two drum lathes, another for two special machines, and a third—this from General Electric Co.—covering a Walker magnetic chuck 9 feet in diameter.

Pittsburgh—Prospects in the machinery market here are dull and there apparently is no improvement in inquiry. Requests for bids seldom involve more than single items and the volume of such work is extremely light. No lists of consequence are pending.

Awards hold at their recent quiet rate, with purchases made as a matter of necessity rather than as a result of modernization programs.

Cleveland—After a rather gloomy week, sentiment in the machinery market has improved almost over night. This sudden change has been due to rather definite assurances as to the new models of Ford automobiles and the probable production programs involved, and also to announcements from Washington which promise early easing of the general financial situation through broadening of functions of the Federal Reserve system.

As far as orders and inquiry are concerned there has been little improvement, although some benefit has been derived from recent releases in the Chicago district. However, pending inquiry, of which there is considerable on the desks of Cleveland equipment builders, in many cases is given a new degree of importance through favorable automotive developments.

Government business continues to be a factor. Monarch Machine Tool Co., Sidney, O., is reported to be the successful bidder on two 20-inch lathes for Wright Field. R. W. Kaltenbach Corp., Bedford, O., is the low bidder on two floating cranes for navy department, bureau of yards and docks. These cranes are destined for Mare Island and San Diego, Calif., and the business will amount to $156,200.

Chicago—Enlivening to the machinery market this week were two sales of equipment, one of which had been pending for some time. An industrial equipment manufacturer purchased $40,000 to $50,000 in automatic machines. An electrical equipment manufacturer bought a 3-inch horizontal boring, drilling and milling machine, a 4-foot radial drill and four sensitive drills, the latter on an old inquiry.

On the other hand, new inquiry shows no pickup. Virtually all distributors in this district are without definite programs upon which to work. Machine tool manufacturers in this area have reported slightly more business from the Detroit area.

Small tools and parts are moving at an easy gait in this market, while fair inquiry continues for used tools. About 30 tools of Western Engineering & Mfg. Co., 2600 Irving Park boulevard, were auctioned Feb. 11.

Machinery Exports Reflect World-Wide Conditions

Washington—General curtailment of industrial activity throughout the world during 1931 was reflected in considerably reduced demand for American industrial machinery, according to a preliminary report just issued by industrial machinery division, department of commerce. Total machinery exports during 1931 amounted to $140,000,000, as compared with $221,000,000 in 1930 and $257,000,000 in 1929.

A notable exception to the declines in all other classifications, however, is the record of metalworking machinery exports in 1931. The value of these exports actually advanced from $39,351,000 in 1930 to $40,030,000 in 1931. Although this gain of nearly $1,000,000 is largely accounted for by Russian purchases, other good customers appeared in the United Kingdom, Canada, Germany and France.

Fluctuations Since July 1930

A review of this trade over the past two years indicates that shipments of industrial machinery to foreign countries began definitely to show effects of worldwide depression in July, 1930. At that time a steady decline set in, which continued until the end of that year. At that point certain stabilizing tendencies appeared and month to month totals for the first nine months of 1931 remained fairly constant as compared to the last six months of 1930.

However, the last quarter of 1931 witnessed a further reduction in foreign demand for American-made industrial equipment. Monthly totals showed decided decreases in volume, except for a spurt in December.

It is evident that during 1931 foreign machinery builders put forth unusual efforts to expand their own markets abroad to compensate for slackened demands within their own domestic industrial circles. This stiffened competition was made particularly effective by long-term credits, in many cases backed by governmental guarantees. Another restricting factor to American machinery business abroad is foreign currency depreciation.

It is evident from the decreased returns for total machinery exports in October, November and December of 1931 that there was heavy falling off in shipments to Russia.

Here and There in Industry

(*Concluded from Page* 14)

at the plant, 3351 Madison road, by the Industrial Plants Corp. This marks the end of manufacturing activities by this company, its customers being served in future by the Weir Kilby Corp.

□ □ □

Almetals Polish Corp., 414 Rush street, Chicago, has leased a 1-story industrial building at 2337-39 Nelson street, which it will occupy.

□ □ □

Dunbar Engineering Co., New York, representing the Edward Valve & Mfg. Co., East Chicago, Ind., has moved its office from 122 East Forty-second street to 21 West street.

□ □ □

Gears & Forgings, Cleveland, has appointed the Frick-Reid Supply Corp., 117 Sandusky street, N.S., Pittsburgh, its representative for the sale of speed reducers.

□ □ □

Gibson Refrigerator Co., Greenville, Mich., has given an order to the Ferro Enameling Corp., Cleveland, for a 5 x 12-foot super-refractory muffle furnace.

□ □ □

Fuel Economy Engineering Co., St. Paul, has been appointed representative in St. Paul territory for the Air Preheater Corp., Wellsville, N. Y., and will handle air preheaters and hot-blast cupola systems.

□ □ □

Stet Mfg. Co., 1620 Pennsylvania avenue, Pittsburgh, manufacturer of steam specialties and continuous feed water regulators has been formed to take over the Williams Gauge Co. of the same address.

□ □ □

Northwest Motor Equipment Co. has bought the business of the Logan Corp., University avenue and Bedford street, Minneapolis. It will act as distributor for motor trucks, tractors, road-building machinery and other industrial equiment.

□ □ □

Domhoff & Joyce Co., 407-412 Schmidt building, Cincinnati, has been granted an agency of the Wedron Silica Co., Chicago, its territory for sale of blast and core sand including part of Indiana, Ohio, Wisconsin, Minnesota and Michigan.

□ □ □

Royal Electric Fixture Corp. has been formed to take over the plant of the bankrupt A. J. Deer Co., Hornell, N. Y. With capital of $150,000 the new company will manufacture slicing machines, coffee grinders and electric refrigerators.

□ □ □

Atlas Mfg. Corp., Indianapolis, Hiram M. Browne, president, has bought the plant of the Air-Moore Products Inc., Thirty-fourth street and Northwestern avenue, where the manufacture of metal specialties will be undertaken.

□ □ □

Industrial Plants Corp., 25 Church street, New York, will offer at public auction sale Feb. 16 the land, buildings and equipment of the Manchester Mfg. Co., Manchester Center, Vt., manufacturer of bakelite and plastic products. The sale will be held at Manchester Center.

□ □ □

Sorel Steel Foundries Ltd., Sorel, Que., has been formed as the successor of Beauchemin & Fils, a subsidiary of Consolidated Marine Companies Ltd. The equipment will be modernized and new lines will be added. P. H. Desrosiers, formerly managing director of the Joliette Steel Ltd., has been made general manager.

□ □ □

Turner & Seymour Mfg. Co., Torrington, Conn., chain maker, has purchased the Smith & Egge Mfg. Co., Bridgeport, Conn., specialist in the manufacture of chain sash. Equipment of the Bridgeport firm will be moved to Torrington and the business operated as a division of the Turner & Seymour Mfg. Co.

□ □ □

Foundry Equipment Co., Cleveland, has bought the business of the McCann-Harrison Co. and will operate it as a division, with main offices and plant at 1831 Columbus road, Cleveland. Foundry Equipment Co. produces core, mold and industrial ovens and McCann-Harrison Co. manufactures conveyor-hearth and standard furnaces for annealing, normalizing and heating.

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Patterson Engineering Corp., 414 United building, Akron, O., has been formed to design and manufacture machinery for rubber, plastic, fuel and other industries, by R. L. Cawood, president of the Patterson Foundry & Machine Co., East Liverpool, O., P. E. Welton vice president, and R. B. Koontz secretary and treasurer. The latter formerly was president and general manager of the Adamson Machine Co.

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Austin Co., Cleveland, announces establishment of a welding division equipped to make welded products in the form of frames, bases and parts for production machinery, construction equipment, road machinery, special machinery and factory equipment such as benches, racks, cradles, fixtures, jigs, etc. All work is for fabrication of parts for new or original equipment and machinery. The new division is located in the company's Bliss road structural steel fabricating plant, East 222nd street and Nickel Plate railroad, and started operations Feb. 15 under the direction of J. E. Ferguson.

Financial News of Steel Industry

CONTINENTAL STEEL CORP., Kokomo, Ind., and subsidiaries, report for 1931 net loss of $406,584 after depreciation, interest and dividends on preferred stocks of subsidiaries, compared with net loss of $37,908 in 1930.

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Harbison Walker Refractories Co., Pittsburgh, reports earnings of $1,284,334, or 76 cents a share, in 1931. This compares with $3,511,558 in 1930, equal to $2.52 a share.

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Scullin Steel Co., St. Louis, reports for year ended Dec. 31 net loss of $499,289 after interest and expenses of unoccupied plant, against net profit of $163,692 in 1930.

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Virginia Bridge & Iron Co., Roanoke, Va., reports net income 1931, after all charges of $21,346, equal to 71 cents a share, against income of $512,013, or $17.07 a share in 1930.

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Arthur G. McKee & Co., Cleveland, earnings after all charges but before dividends were $551,118 in 1931, compared with $547,747 in 1930 and $446,741 in 1929. Earnings per share on class B stock were $6.58 in 1931, against $6.49 in 1930 and $5.29 in 1929.

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M. A. Hanna Co., Buffalo, earned $1,337,925 in 1931, equal to $9.95 on the $7 preferred stock, compared with earnings of $2,266,815 in 1930. Balance sheet as of Dec. 31, 1931, showed current assets of $5,017,450, against $2,155,642 of current liabilities. In 1931 a depreciation item of $390,881 was charged off.

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United Engineering & Foundry Co., Pittsburgh, reports net earnings after all charges of $953,708 in 1931, equal after preferred dividends to $2.13 a common share. This compares with net of $2,114,359, or $4.86 a common share, in 1930. The company reports a strong financial condition featuring current assets of $6,437,903, comparing with current liabilities of $320,687 as of Dec. 31, 1931.

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Sivyer Steel Casting Co., Milwaukee, reports a net loss of $73,964 after all charges, including depreciation, for 1931, compared with net profit of $81,000 or $1.01 a share on 80,000 shares of common in 1930. Dec. 31, 1931, balance sheet showed current assets of $490,129 and current liabilities of $42,754. At the end of the preceding year these figures were $568,394 and $88,342.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New York

BROOKLYN—Ruden & Aaraas have been incorporated with $20,000 capital to carry on the business of remodeling machinery, by A. H. Stein, 1450 Broadway, N. Y.

BROOKLYN—Frisco Copper Heating Mfg. Co. has been incorporated to manufacture heating units, with $20,000 capital, by W. Walter, 16 Court street, Brooklyn, N. Y.

BUFFALO — Morrison Metal Weld Process has been incorporated with 200 shares common stock, by Cohn, Hill & Kavinoky, Buffalo, N. Y.

NEW YORK—Federal Steel Co. has been incorporated with $50,000 capital, by S. S. Hauben, 305 Broadway.

NEW YORK—Ralph Seark has been incorporated with 200 shares common stock to conduct a machine shop, by S. Adelman, 110 William street.

NEW YORK—Elco Engineering Co. has been incorporated with 100 shares no par value to manufacture electrical appliances, by S. D. A. Jones, 43 Exchange place.

NEW YORK—Erickson Specialty Co. has been incorporated with 500 shares common stock to manufacture tools and machines, by J. McCloskey, 475 Fifth avenue.

NEW YORK—Columbia university, J. W. Barker, dean of college of engineering, in charge, 116th and Broadway, is having plans made for an engineering school, shop and laboratory center, at an eventual cost of $20,000,000.

Pennsylvania

FRANKLIN—Venango Mfg. Co., division of Franklin Railway Supply Co., First and Liberty streets, Franklin, is having plans made for construction of a plant to manufacture locomotive and automobile parts.

HARRISBURG—Stouffer Tractor & Equipment Co. has been incorporated with $50,000 capital to manufacture and service tractors, road and farm machinery, by Edwin I. Stouffer, 151 West Twenty-fifth street, Camp Hill, Pa.

PHILADELPHIA — Lehman Sprayshield Co. has been incorporated with $50,000 capital to manufacture building equipment, shower enclosures and metal and glass specialties, by Ross S. Lehman, 6236 North Broad street, Philadelphia.

PHILADELPHIA — Keystone Metal Works Inc. has been incorporated with 51 shares of no par value to conduct a general stamping and die works and the manufacture of metal products, by Inez G. Dether, 1907 North Mascher street, Philadelphia.

PITTSBURGH—W. N. Dambach Inc. has been incorporated with $10,000 capital to conduct steel warehouse and engineering service, by M. A. Benz, 123 Boulevard, Pittsburgh.

SLATINGTON—Keystone Lamp Mfg. Co. has been incorporated with $50,000 capital to manufacture home appliances and novelties, by Louis Goldstein, 4920 Seventeenth avenue, Brooklyn, N. Y.

Ohio

CLEVELAND—Cleveland Worm & Gear Co., 3249 East Eightieth street, suffered loss from fire starting in an oil-fired annealing oven.

CLEVELAND—Insulated Steel Inc. has been incorporated with $125,000 capital and 600 shares no par value by Joseph H. Schlitz and associates. Holding, Duncan & Leckie, 1970 Union Trust building, are attorneys.

OBERLIN—Trustees Oberlin college, Dr. Ernest H. Wilkins president, T. M. Crutsinger superintendent of construction, will take bids about Feb. 22 for a heating plane, 60 x 80 feet, steel sash, three 400-horsepower boilers, to cost about $325,000.

ORRVILLE—City of Orrville, Willis Horn mayor, is taking figures on a steam turbine and miscellaneous improvements for the municipal water and light plant, to cost about $72,000.

Michigan

DETROIT—Siegel Iron & Metal Co., 9800 Greely street, has been incorporated with $5000 capital to conduct a scrap iron and metal business, by Abraham Siegel and associates.

DETROIT—Precision Spring Corp., 5900 Federal avenue, has been incorporated with $125,000 capital to manufacture metal springs and stampings, by A. H. Peterson, 2551 Ferris avenue, and associates.

GRAND RAPIDS—National Spring & Wire Co., 1029 Michigan Trust building, has been incorporated with 200 shares no par value to manufacture spring and wire constructions, by Fred A. Nachman, Louis A. Suekoff and Charles R. Simonds.

OWOSSO—Kelly-Robbins Mfg. Co. Inc. has been incorporated with $25,000 capital to manufacture portable power units for hand stocks and pipe dies, by John O. Kelly, 530 North Dewey street, Owosso, Mich., and associates.

PLYMOUTH — Perfection Sprinkler Co. has been incorporated with 10,000 shares no par value to manufacture sprinklers and accessories, by Charles H. Bennett, Plymouth, Mich.

Indiana

LAFAYETTE—Machine Products Inc. has been incorporated with 100 shares no par value to manufacture machinery, by W. G. Thomas and John F. Dewey.

Illinois

CHICAGO—Imperial Smelting Corp. has been incorporated with $5000 capital to deal in metals, by I. Lippa, 5501 Washington boulevard, Chicago.

CHICAGO — Levin Iron Co., 1103 South Washtenaw avenue, has been incorporated with $10,000 capital to deal in metals, by Seymour G. Klaff and associates.

CHICAGO—Automatic Gas Lok Mfg. Co., 21 East Van Buren street, has been incorporated with $2500 capital to manufacture gas locks, by George Chazanow and Samuel Greenberg.

CHICAGO — Lake Shore Pattern Works Inc. has been incorporated with $20,000 capital to manufacture metal specialties, by Gustave A. Andres, 5813 Ravenswood avenue.

CHICAGO—G. & L. Machine & Tool Works, 1926 Wabash avenue, has been incorporated with $20,000 capital to do general machine work, by Edgar J. Schoen, 1448 First National Bank building, Chicago.

CHICAGO—Abt Metal Windows & Skylight Co., 2651 West Roosevelt road, has been incorporated with $100,000 capital to operate a general sheet metal works, by George H. Krutzkoff and Louis Abt.

PEORIA—National Metal Exchange Inc., 517 Commercial Merchants Bank building, has been incorporated with 100 shares no par value to deal in metal products, B. Jay Gould and associates. Gould, Stewart & Co., Peoria, are correspondents.

District of Columbia

WASHINGTON—Bids will be received Feb. 23 by the bureau of supplies and accounts, navy department for the following supplies: Schedule 7398, vertical motor-driven turret lathes, for Mare island navy yard; Schedule 7402, one motor-driven expanding and flanging machine, for Mare island navy yard; Schedule 7378, steel rivets and washers, for various delivery points; Schedule 7406, four motor-driven turret lathes, 2½ x 24 inches; Schedule 7405, four motor-driven turret lathes; Schedule 7404, one universal, motor-driven tool grinder, 8 x 24 inches; Schedule 7402, one motor-driven expanding and flanging machine; Schedule 7424, one motor-driven double surface planer; Schedule 7422, one motor-driven all-geared, 20 inches, vertical drill; Schedule 7419, one gasoline engine-driven, single operator type arc welding outfit.

Wisconsin

MILWAUKEE—Filer & Stowell Co., 147 East Becher street, is building an

addition to its foundry, 63 x 168 feet. Klug & Smith Co., Mack block, is contractor.

Pacific Coast

LOS ANGELES—Chrysler Corp., 341 Massachusetts avenue, Detroit, is building an automobile assembly plant, 300 x 850 feet, and a 2-story administration building, 60 x 100 feet, at Eastland and Slauson avenues, at estimated cost of $2,000,000.

Dominion of Canada

BRANTFORD, ONT.—Pittsburgh Water Heater Co., Pittsburgh, will take over part of the Secord plant on Nelson street, Brantford, and equip it for assembly of water heaters and other devices.

HAMILTON, ONT.—Hamilton Clamp & Stamping Works, 62 Ashley street, has given contract to Inglis & Son, 58 Leaming street, for a 1-story addition, 35 x 50 feet.

New Trade Publications

ALUMINUM AND ALLOYS—Aluminum Co. of America, Pittsburgh, has issued a reference book on aluminum and its alloys. It gives concise information on the physical and chemical properties of the company's alloys and tables showing sizes of basic commodities it manufactures from these alloys. Commercial tolerances are also given.

BOILERS—Combustion Engineering Corp., 200 Madison avenue, New York, has issued a catalog of its VM type boiler, bent tube type, designed for plants with limited space conditions and low headroom. It is available in sizes from 1215 to 5328 square feet of heating surface, adaptable to any type of firing and can be set double.

BUCKETS — Wellman Engineering Co., Cleveland, has issued a bulletin on its type MF bucket, part of the Williams line, recently acquired. The bucket described in this bulletin is featured by low headroom, long spread in open position and straight line rope reeving.

CLUTCHES—Magnetic Mfg. Co., Milwaukee, describes its line of Stearns multiple disk magnetic clutches in Bulletin No. 50. This is a recently developed clutch and the bulletin gives complete technical data on features and characteristics.

CLUTCH—Ramsey Chain Co. Inc., Albany, N. Y., has issued bulletin No. 132 on the Ramsey-Pulvis clutch, designed to permit driving motor to come to full speed without load, give protection against overload shocks and eliminate transmission of working strains.

MOTORS — Wagner Electric Corp., 6400 Plymouth avenue, St. Louis, has issued a looseleaf bulletin sheet on its brush-riding repulsion-induction motors, Bulletin 173, part 4.

CONDUIT FITTINGS—Appleton Electric Co., 1701 Wellington avenue, Chicago, has issued Catalog No. 10 on its threaded and no-thread malleable fittings, couplings, connectors and similar accessories.

ELECTRIC FURNACE—H. O. Swoboda Inc., 3400 Forbes street, Pittsburgh, has issued Bulletin No. 220 on its strtaight line continuous furnace equipments for hardening and tempering strip steel. The bulletin in concise form covers the salient points of this equipment.

ENGINEERING ACHIEVEMENTS—The fifth of a series of folders on its engineering achievements has been issued by the Wellman Engineering Co., Cleveland. It recounts the invention of the open-hearth charging machine in years gone by and of the mobile mooring mast for the giant dirigible AKRON in recent days.

FIELD RHEOSTATS—General Electric Co., Schenectady, N. Y., in Bulletin No. 1084A covers its line of plate-type field rheostats for regulating voltage on generator fields and speed adjustments on motors.

FORGE FITTINGS—Taylor Forge & Pipe Works, box 485, Chicago, in Bulletin 32-1 lists its forge seamless steel fittings for welding and its forge flanges.

GAS PRODUCERS—Bulletin No. 45 by the Semet-Solvay Engineering Corp., 40 Rector street, New York, is devoted to its Koller type gas producer, showing its construction and operation and explaining the production of gas by this means.

GEARMOTORS—Westinghouse Electric & Mfg. Co., Pittsburgh, has issued Leaflet 20536 on its gearmotors, which are speed reducers compactly combined with induction motors, forming general purpose unit drives. The leaflet contains information on application and operation, details of construction, sizes and speeds and tables of dimensions.

GENERATING SETS—Bulletin 1308 of the General Electric Co., Schenectady, N. Y., is devoted to its continuous-rated alternating current steam engine driven generating sets. Data and illustrations give complete information.

GRAPHITE LUBRICANT—Acheson Oildag Co., Port Huron, Mich., has issued a technical bulletin on colloidal graphite as a high temperature lubricant. The nature of this form of graphite is explained and application made as a lubricant under difficult conditions of high temperature.

INTERLOCKING FLOOR—Belmont Iron Works, Twenty-second street and Washington avenue, Philadelphia, has issued a catalog on its type of interlocking steel floor, fabricated from structural channels. A record of tests of the floor is presented.

MOTORS—Reliance Electric & Engineering Co., 1042 Ivanhoe road, Cleveland, in Bulletin No. 211 presents its new large direct-current motors from 100 horsepower, 200 revolutions per minute, to 350 horsepower, 850 revolutions per minute. The bulletin includes details of construction, cross-sectional drawings, dimensions and table of ratings.

NITRIDING STEEL—Bulletin No. CV 1 by the Electro Metallurgical Co., 30 East Forty-second street, New York, is devoted to chrome-vanadium nitriding steel. The nitriding process is described and explained and various factors are evaluated as to their importance in the finished product.

QUENCHING—A book of 80 pages by E. F. Houghton & Co., 240 West Somerset street, Philadelphia, is devoted to the subject of quenching in the progress of heat treating. It embodies the results of research by the Houghton staff and is illustrated by 30 charts and photomicrographs, showing changes in structure under tempering conditions.

ROLL LATHES—United Engineering & Foundry Co. presents in Bulletin L-1201 a series of its heavy duty roll lathes. They are high-speed, highly specialized, roller-bearing machines for turning, grooving, finishing and dressing rolls of any size or shape, for large and small plants. The bulletin is illustrated.

STAINLESS STEEL—American Stainless Steel Co., Pittsburgh, is distributing a booklet covering the uses of its corrosion-resistant steels. The classifications include advantages in metal products, food-handling equipment, automotive, oil handling, paper making, textile machinery and other groups.

STARTING SWITCH—Allen-Bradley Co., Milwaukee, in Bulletin No. 726 describes its high-tension across-the-line starting switch, with illustrations and charts.

STEEL CASTINGS — National-Erie Corp., Erie, Pa., in a current leaflet gives engineering data on its heat-treated and hardened gears and its alloy steel castings. A page is devoted to description of facilities available to patrons of the foundry.

SUCTION LINE PRIMER—Barrett, Haentjens & Co., Hazelton, Pa., has issued Bulletin No. 530 on a priming device for centrifugal pumps. It combines a check valve, strainer and air removing device, in various sizes up to 1500 gallons per minute and a maximum operating head of 200 feet.

TIN PLATING—Plating steel and other metals with tin by use of sodium stannate-acetate plating bath is described in a booklet issued by the Roessler & Hasslacher Chemical Co., Niagara Falls, N. Y. The publication contains information on the composition and preparation of the solution, operating conditions, methods of control and maintenance, testing and other data.

VANADIUM STEELS — Vanadium Corp. of America, 120 Broadway, New York, has revised and reissued its specifications 3B to 9B, inclusive, covering vanadium steels for various purposes.